3.2.2 **Number of books and chapters in edited volumes/books published and papers published in national/ international conference proceedings per teacher during the year.**

Sr. No	Name of the teacher	Title of the book/chapters published	Title of the paper	Title of the proceedings of the conference	Name of the conference	National / International	Year of publication	ISBN/ISSN number of the proceeding	Click on Page Number
1	Mr. Sagarkumar J. Aswar		Optimization of CO2 Laser Process Parameters for Minimizing HAZ and Surface Roughness in Hastelloy C-276	IRST-2023	International Conference on Innovative Research in Science and Technology	International	2023		02
2	Mrs. G. P Mohole		College Enquiry chat-bot using NLP	IC-RTETM-2023	Recent Trends in Engineering Science, Technology and Management	International	2023	ISBN : 978-93-93565-00-6	189
3	Mrs. G. P Mohole	Programming and Problem Solving					2022	ISBN : 978-93-89366-55-6	203

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Optimization of CO2 Laser Process Parameters for Minimizing HAZ and Surface Roughness in Hastelloy C-276

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Abstract

One of the most popular production techniques is laser beam machining, which is used to cut, engrave, and weld a variety of materials, including metals, plastics, ceramics, etc. Hastelloy C-276 sheet metal is typically sliced using a CO2 laser. The present study analyses the effects of adjusting parameters during CO2 laser cutting, including cutting speed, laser power, and gas pressure, on the precision of the laser-beam-milled surface on sheet metal made of Hastelloy C-276. Response variables like HAZ and surface roughness are used to gauge the blade quality. A Taguchi method design is used to carry out experiment planning using main effect plots that are created using ANOVA, the impact of the process factors on response has been investigated. After the experimental design according to the Taguchi method, the evaluation is carried out with the use of a technique known as Analysis of Variance. The ratio of the signal to the noise is utilized to evaluate which measurement is the most accurate.

Keywords: Hastelloy C-276, Laser Cutting, cutting speed, laser power, gas pressure, Taguchi Method

1. Introduction

Through technological advancements, laser cutting of sheet metal is now a commercially viable means of production. The laser cut's quality is crucial to the laser cutting procedure. The CO2 laser equipment has a wide range of industrial uses, including laser engraving, laser cutting, and laser marking. The final product from the laser cutting procedure doesn't require any additional finishing steps. However, due to incorrectly set cutting parameters, poor metal cut quality has become a significant problem in the business. Therefore, it is essential to determine how cutting factors affect the final product's quality. Typically, cutting parameters are tuned and adjusted to produce excellent cuts. But doing this takes a tremendous lot of time and energy. In order to determine how cutting factors, affect cut quality, further research is required. Ferritic steel is sheet metal Hastelloy C-276. It resists corrosion at high temperatures and has excellent mechanical properties. Hastelloy C-276 is frequently used in the production of pressure containers, blowers, fans, and catalytic converter systems that operate in harsh environments with high temperatures and corrosion. The finished product from the laser cutting procedure doesn't require any additional finishing.

On the other hand, because cutting parameters were not set properly, poor cut quality has become a serious problem in the business. An investigation into how cutting factors affect cut quality was conducted after address this issue. The most important objective of this research is to determine how the cutting factors of a particular machine affect the quality of the cut on sheet metal Hastelloy C-276. Therefore, using the Taguchi method, the goal is to find the ideal settings for the laser cutter so that the average surface roughness and HAZ of the cutting material may be kept to a minimum under the most reliable of situations for sheet metal Hastelloy C-276. In order to determine the primary impacts and interactions of the parameters, Design Expert Software can be used by Girdu et. al. [1]. The CO_2 laser manufacturing processes' energy costs are reduced because of the findings. The combinations of laser speed and power that have been found result in lower energy consumption and higher processing efficiencies. With the development of mathematical equations for linear energy and cutting efficiency, this research provides to expanding both the theoretical as well as the practical base. Madic et. al. [2] found that the overall effectiveness may be affected in different ways depending on the laser cutting parameters used. There is a substantial amount of similarity between the circumstances that are most ideal for laser cutting and those that are least desirable for it. This bolsters the used approach by contrasting the results with those found through traditional desirability-based multi-objective optimization. Alsoruji et. al. [3] studied the development of a multi-criterion decision-making procedure in laser beam drilling for the goal of optimizing the machining measurements of the nickel Inconel 718 alloy. Taguchi-Grey Relation Analysis (TGRA) was recommended as a method for determining the best process variables that would result in a better material removal rate, a smoother surface, and a smaller taper angle during the machining process. Due to the

importance of concentrated energy, gas pressure plays the most significant part in LBM performance measures. Under the suggested ideal process factors, the surface topography could be achieved on a machined specimen with hardly any micro cracks.

Senthilkumar et. al. [4] addressed the laser cutting on AISI 304 stainless steel has varying evaluation metrics using a grey grade established by grey relational analysis. According to the grey grade, cutting speed has a bigger influence on responses like hardness, kerf width, and MRR than laser beam strength, gas pressure, and standoff distance. It is abundantly obvious that the laser cutting performance characteristics are capable of being improved through the utilization of the GRA approach. Sridarane et. al. [5] studied thick metal sheets can be cut into intricate shapes using the well-known thermal-based manufacturing method known as laser cutting. The width of the kerf is more crucial when using a laser cutter and is determined by the choice of the right specifications. In this study, an artificial neural network (ANN) was employed to determine the kerf width of a mild steel when it is cut with a CO2 laser while accounting for the laser beam power, cutting speed, and gas pressure. It was discovered that both the goal outcomes and the models had extremely low error rates. Singh et. al. [6] used of a high-speed photography to investigate how laser cutting works by filming the impact of a powerful laser beam on test objects. Since minimum surface roughness and thin kerf are often preferred as performance metrics for making holes for industry sectors, this study is important for making tiny holes for structural parts such as rivets, bolts, and fastenings in arrangement. Even though the impacts and conversations of a specifications were complicated, the results showed that laser cutting of ABNT 1045 steel could be optimized by Zeilmann et. al. [7]. This research's conclusion states that the major variables influencing the formation of burrs and rough surfaces during laser cutting of ABNT 1045 steel are cutting speed and assist gas pressure. Hiwale et. al. [8] used spatial characteristic the undesirable machining feature known as kerf deviation must be reduced. The right machining parameters must be chosen for the substance of the component to reduce kerf deviation characteristics. In order to determine how the laser process parameters of "laser power," "cutting speed," "gas pressure," "working distance," and "focus position" affect, a study was done to determine the optimal values for top kerf deviation and bottom kerf deviation.

Lohr et. al. [9] valued of KPD is then predicted using an artificial neural network (ANN)-based model, which takes into consideration all the factors affecting the cutting process as well as the various classification criteria used. The primary contributions of this paper are the novel metrics that are suggested for evaluating the kerf profile in PMMA sheets. Second, choosing the best cutting parameters, using ANN as a precise technique for geometrical modelling, and connecting the factors that affect laser cutting. Khoshaim et. al. [10] applied different process responses have been correlated with various process variables using regression models. There were distinct hard, medium, and softer regions on the cross-section. By increasing gas pressure and laser power while lowering sheet thickness and cutting speed, the rough area is expanded. At high cutting speeds, high laser powers, and high gas pressures, increased kerf variation has been seen. The worst surface roughness and largest heat affected zone were created by high laser power and slow cutting speed. A lower laser power and a quick cutting speed are recommended for decreasing the heat affected zone and surface roughness. Yet, increasing this cutting speed might result in an unacceptable amount of kerf variation. Bucossi et. al. [11] showed that the circumstances needed to cut grids were different from those needed to cut straight lines. The P/S ratio, which determines the heat input energy and the delivered energy density, was thus determined to be the most influential factor in determining the characteristic richness of these grid systems, given a constant frequency of heartbeats. These findings offer a scalable way for figuring out the laser cutting parameters needed to create intricate, very large-area CNT structures. Tura et. al. [12] studied surface roughness which was minimized during laser cutting of CO2 utilizing a sound wave in 304 stainless steels by employing a genetic algorithm in conjunction with the response surface approach. Taguchi L9 orthogonal mesh experiments were conducted to analyze the results of varying processing variables such as cutting speed, nitrogen gas pressure, and focal point position. The influence of printing parameters on surface roughness was assessed using ANOVA, main effect plots, and 3D surface plots.

Anghel et. al. [13] studied the cut surface underwent a SEM examination, It exposed a smooth, even surface with a faint woven design at the top and some attached dirt at the bottom. The absence of cavity, fissures, and dents on the outside is evidence that favorable surface morphology was produced under ideal conditions. The findings of this study show that laser beam cutting has a potential for producing high-quality miniature gears. Shrivastava et. al [14] applied pulsed Nd:YAG laser cutting was used to cut a sheet of titanium (grade 5) alloy with the narrowest kerf and the least kerf variation possible. An approach that combines multiple regression analysis and genetic algorithms has been devised and used to optimize kerf deviation and kerf width simultaneously. The statistical evaluation of the created model for kerf width and kerf deviation has been performed using the analysis of variance (ANOVA) technique. The significance of the ANOVA result shows that the created models are useful and have potential application in predicting

kerf width and kerf deviation. Eltawahni et. al. [15] investigated CO2 laser cutting of AISI316L medicinal grade stainless steel. In order to create the experiment layout, the design of experiment (DOE) method was applied. The primary goal of this study to establish a causal relationship between the process parameters and the state-of-the-art quality parameters of higher kerf, lower kerf, their ratio, cut section roughness, and operating cost. The best cutting setting to improve quality or reduce running costs was then determined by applying a general optimization routine. Mathematical models were developed to identify the relationship between the process variables and the edge quality features. It has also been determined how processing factors affected quality features. Parthiban et. al. [16] according to the study, the correct selection process variables determine the minimal kerf width necessary while cutting stainless steel plate. The factors taken into consideration include cutting speed, gas pressure, and laser output strength. Further research on the effect of cutting parameters on cut accuracy was conducted utilizing the box-behnken developing a response surface approach to track top and bottom kerf sizes. Ultimately, most optimal settings for a CO2 laser cutter are determined to use a genetic algorithm. Similar kind of approaches are observed in the literature [17-23] for welding processes.

2. Material and methods

Hastelloy C 276 was the material selected for analysis in this research. Fig. 1. shows the laser cutting process of Hastelloy C-276 sheet. Calculating Surface Roughness and HAZ, three standard cutting factors Laser Power, cutting speed and gas pressure are necessary during the cutting procedure. In order to achieve a minimum, the given study employs an optimization technique focused on the Taguchi process parameter configuration with a sequence of steps.

Fig.1. Laser cutting process of Hastelloy C-276 sheet

Hastelloy C 276 contains 15.5% chromium, 0.6% Magnesium, and 0.088% carbon, 0.034% Silicon, 0.001% Sulphur, 0.004% Phosphorus. The level of carbon, which has a mixed value, is maintained to be suitable for most of the service uses. Following Spectro analysis, Table 1 displays the sample's chemical analysis and Table 2 shows the mechanical characteristic of the materials used for the study.

Table 1. Common Hastelloy C 276 chemical elements

Element	C	Mn	Si	S	P	Cr	Ni	Mo	Co	W	Fe	V
W%	0.08	0.6	0.034	0.001	0.004	15.5	Ra	16.5	0.087	3.11	6.2	0.11

Table 2. Carbon steel's mechanical characteristics

Material	Tensile strength (MPa)	Yield strength (MPa)	Elongation	Density
Hastelloy C 276	790	355	40%	8.89/cm3

2.1 Experimental approach

The Taguchi method was used to establish the optimal values for the processing variables that would result in the lowest Surface roughness and HAZ during the CO_2 Laser cutting. Taguchi suggested adopting orthogonal arrays to collect unique information and analyzing the information to discover the optimal approach variables. The Taguchi quality concept design suggests that there are three possible output features to consider when evaluating the signal-to-noise ratio: the lower-the-better, the higher-the-better, and the nominal-the-better. Using orthogonal arrays, this approach requires only a small sample size to evaluate a wide variety of parameters. There is a correlation between a higher signal-to-noise ratio and improved output characteristics. In this case, the best S/N ratio performance can be achieved at the stage of the process parameters. Analysis of variance classifies statistically important process factors (ANOVA). The lower Surface roughness and HAZ have been chosen for the characteristics that will maximize machining productivity. The measurements of output period were used in the following equation to determine the values for the lower is better criterion for the corresponding S/N ratios.

$$\text{S/N ratio } (\eta) = -10\log_{10}\frac{1}{n}\sum_{i=1}^{n} y_i{}^2$$

3. Process parameters and design of experiments (DOE)

Using the Design of Experiments can help you conduct studies more methodically. Table 3 lists the process factors along with their levels. The Taguchi technique only performs a limited number of trials while analyzing the full parameter range using a straightforward design of orthogonal arrays. The research employed a Taguchi-based experimental design with a conventional L_9 orthogonal array and three levels of three critical process parameters including laser power, cutting speed, and gas pressure.

Table 3. Process factors and levels

Input process parameters	Unit	Notation	Min Limit	Max Limit
Laser Power	watt	LP	2100	3500
Cutting Speed	mm/min	CS	1200	2500
Gas Pressure	bar	GP	12	16

3.1 Alignment orthogonal

The L_9 OA utilized in this study allows for the estimation of a high number of critical effects in a perpendicular fashion with a small sample size, as seen in the table below. Experiments on L_9 OA are included in Table 4 displays experimental arrangements utilizing an orthogonal matrix from L_9.

Table 4. Displays investigational arrangements utilizing a rectangular matrix of L9.

Exp. No.	LP	CS	GP
1	2100	1200	12
2	2100	1850	14
3	2100	2500	16
4	2800	1200	14
5	2800	1850	16
6	2800	2500	12
7	3500	1200	16
8	3500	1850	12
9	3500	2500	14

4. Results and Discussion

Nine experiments were effectively carried out using the Taguchi method. The testing results for HAZ and Surface Roughness are presented in Tables 5 and 7, along with pertinent S/N ratios. While machining, it is common to aim for low HAZ and Surface Roughness values to ensure a high standard of quality and precision. That's why it's preferable for HAZ and Surface Roughness if the provided data is as low as possible.

Table 5. Outcomes of tests on HAZ and S/N ratio

Exp. No.	LP	CS	GP	HAZ (mm)	SNRA1
1	2100	1200	12	0.16	15.91
2	2100	1850	14	0.14	17.07
3	2100	2500	16	0.12	18.41
4	2800	1200	14	0.19	14.42
5	2800	1850	16	0.16	15.91
6	2800	2500	12	0.16	15.91
7	3500	1200	16	0.22	13.15
8	3500	1850	12	0.24	12.39
9	3500	2500	14	0.21	13.55

Parameters for control are organized by means of an orthogonal matrix, Table 6 shows the S/N ratio that was determined for the HAZ (Fig. 2).

Table 6. Response chart for HAZ Signal-to-Noise ratios

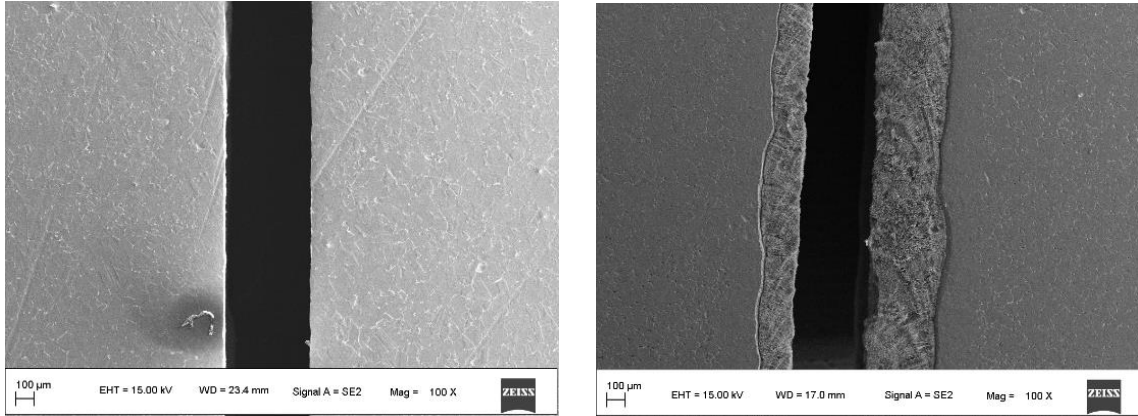| Level	LP (Watt)	CS (mm/min)	GP (bar)
1	**17.14**	14.50	14.74
2	15.42	15.13	15.02
3	13.03	**15.96**	**15.83**
Delta	4.10	1.47	1.08
Rank	1	2	3
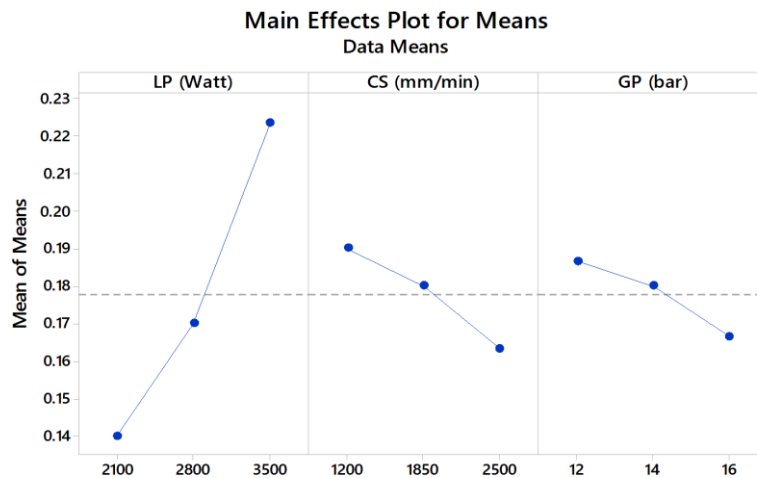
Fig. 2. Plots of the main effects for HAZ

Fig. 3. Effect of laser process parameter on HAZ

Fig. 3. Shows (specimen) the effect of process parameters on HAZ, it was found that a laser power of 2100 watts, gas pressure of 16 bar, and cutting speed of 2500 mm/min resulted on performance and quality of machined components, with HAZ of 0.08 mm.

Table 7 Outcomes of experiments on Surface Roughness and S/N ratio

Exp. No.	LP	CS	GP	Surface Roughness	SNRA1
1	2100	1200	12	0.84	1.51441
2	2100	1850	14	0.74	2.61537
3	2100	2500	16	0.70	3.09804
4	2800	1200	14	0.95	0.44553
5	2800	1850	16	0.90	0.91515
6	2800	2500	12	0.90	0.91515
7	3500	1200	16	1.12	-0.98436
8	3500	1850	12	1.06	-0.50612
9	3500	2500	14	1.03	-0.25674

Similar, plot the main effects plots and assess for surface roughness. Characteristics for monitoring are organized by means of an orthogonal matrix. and Table 8 shows surface roughness which is also measured in terms of its S/N ratio (Fig 3).

Table 8 Response chart for surface roughness signal-to-noise ratios

Level	LP (Watt)	cs (mm/min)	GP (bar)
1	0.7600	**0.9700**	**0.9333**
2	0.9167	0.9000	0.9067
3	**1.0700**	0.8767	0.9067
Delta	0.3100	0.0933	0.0267
Rank	1	2	3
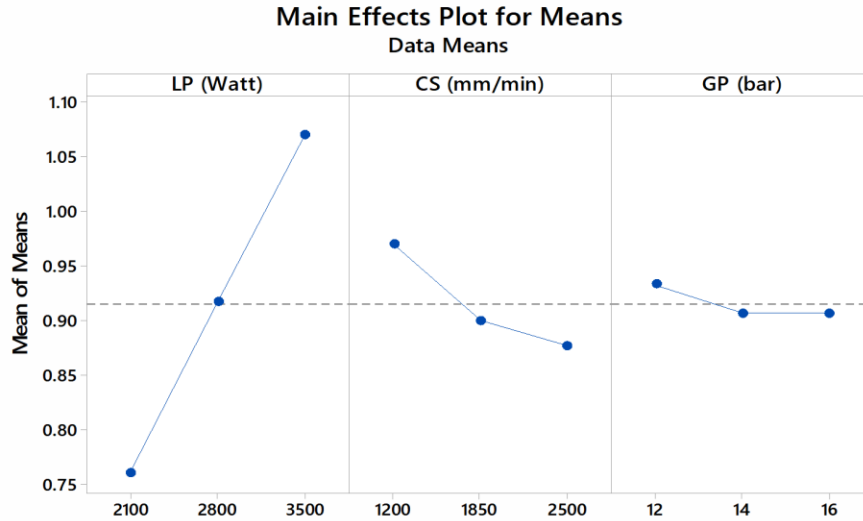
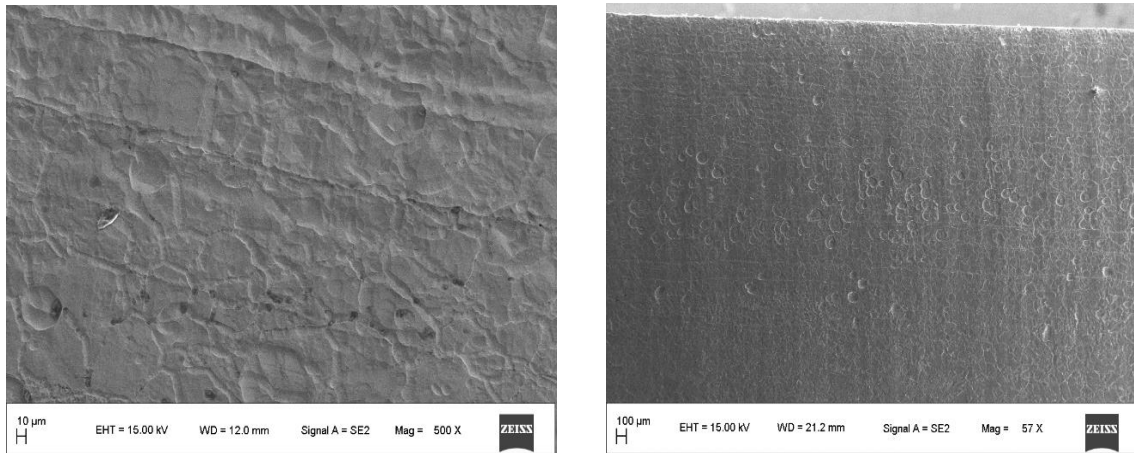Fig. 3. Plots of the main effects for Surface Roughness

Fig. 4. Effect of laser process parameter on surface roughness

Fig. 4. Shows effect of process parameters on surface roughness, it was found that a laser power of 3500 watts, gas pressure of 12 bar, and cutting speed of 1850 mm/min resulted on performance and quality of machined components, with Surface Roughness of 1.07 mm. The laser process parameters can significantly affect the surface roughness and heat-affected zone (HAZ) of a material during laser processing. The surface roughness and HAZ are important parameters that can impact the quality and performance of laser-processed materials. Here are some effects of laser process parameters on HAZ and surface roughness:

Laser power: Higher laser power generally results in increased melting and evaporation of material, leading to deeper melting and larger HAZ. This can also cause higher surface roughness due to the formation of larger melt pools and increased solidification rates. However, lower laser power may result in incomplete melting and lower surface roughness.

Laser cutting speed: Higher cutting speeds generally result in lower surface roughness, as the laser energy is rapidly moved across the material, reducing the time for heat accumulation, and allowing for faster solidification. However, very high cutting speeds may result in incomplete melting and lower material removal rates, leading to increased surface roughness.

Gas pressure: The type and flow rate of assist gas used during laser processing can affect the surface roughness and HAZ. Appropriate gas flow can help in removing debris and reducing the formation of oxides, resulting in improved surface quality. However, excessive gas flow can also cause turbulence and result in higher surface roughness.

It's important to note that the effects of laser process parameters on surface roughness and HAZ can be complex and may vary depending on the specific material, laser system, and processing conditions. Therefore, optimization of laser process parameters for a particular material and application is crucial to achieve the desired surface roughness and HAZ characteristics.

Here using the Taguchi analysis, it was observed that for minimum HAZ the lower laser power (2100 W), higher cutting speed (2500 mm/min) and higher gas pressure (16 bar) can be used. Whereas for minimum surface roughness higher laser power (3500 W), lower cutting speed (1850mm/min), lower gas pressure (12 bar) can be used for optimum results.

4.1 Validation of experiment

Using the optimum levels of each process parameters, confirmation experimentation was carried out to check the feasibility and accuracy of the analysis for the considered material Hastelloy C-276. The Table 9 shows the actual and predicted values of each experimental conditions for HAZ and surface roughness. The optimum values of each process parameters are shown in Table 9 which are derived from the Taguchi method, predictions for HAZ and Surface Roughness were made. For HAZ, the Taguchi method predicted a value of 0.083 mm at a laser power of 2100 watts, a cutting speed of 2500 mm/min, and a gas pressure of 16 bar. This gives HAZ of 0.08 mm during the actual experiment. Surface Roughness was predicted by the Taguchi Method to be 1.08 µm when the laser power was 3500 watts, the cutting speed was 1850 mm/min, and the gas pressure was 12 bar and the actual roughness value obtained was 1.07 µm, both the results show good agreements.

Table 9. Confirmation Test for HAZ and Surface roughness

| Output characteristics	LP	CS	GP	Predicted	Actual	% error
HAZ	2100	2500	16	0.083	0.08	3.75
Surface roughness	3500	1850	12	1.08	1.07	1

5. Conclusions

In this research, the Taguchi method's parameter design was used to explore and describe the HAZ and Surface Roughness in the optimization of CO_2 laser cutting operations. The primary objective is to optimize the output characteristics, including "HAZ" and "Ra," for the selected range of process parameters, including "laser power," "cutting speed," and "gas pressure." The experimental results of this research can be used to draw the following conclusions:

1. Based on the analysis of modification results, HAZ and Surface roughness characteristics that are particularly effective were identified. The Laser power plays the largest role in achieving the best HAZ and surface roughness.

2. The optimal circumstances for minimizing HAZ are laser power of 2100, cutting speed of 2500, and gas pressure of 16, and for minimizing Surface roughness are laser power of 3500 watts, cutting speed of 1850 mm/min, and gas pressure of 12 bar.

3. Also, the results of this study show that the Taguchi method can be used to optimize laser machining process parameters for the material Hastelloy C-276 sheet to get the required performance and quality of the machined parts.

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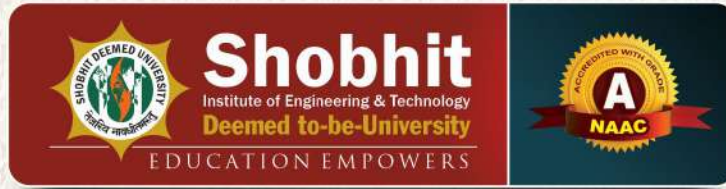
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Citations: Abstracts cum Souvenir of an International Conference on *"Innovative Research in Science and Technology IRST-2023",* May 23-25, 2023 at Shobhit Institute of Engineering & Technology (Deemed-to - be University), NH-58, Modipuram, Meerut -250110.

प्रो. टी. जी. सीताराम
अध्यक्ष
Prof. T. G. Sitharam
Chairman

सत्यमेव जयते

आज़ादी का
अमृत महोत्सव

MESSAGE

I am happy to know that Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, UP is organizing an International Conference on Innovative Research in Science and Technology (IRST-2023). It is also an encouraging sign that AICTE is sponsoring IRST-2023.

The Conference, true to its objective shall be a platform for the young researchers to imbibe advanced and global level of innovative research in science & technology domain. Urging all scientific researchers to make optimum use of this opportunity by interacting and learning from leading academicians, scientists, researchers & research scholars of global repute. Such interaction shall also go a long way in expanding the research community and towards enhancing its research quality.

On this occasion, I extend my warm greetings and good wishes for a successful conference. Also extending my best wishes to Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, UP in all its endeavor.

Prof. T G Sitharam

Kunwar Shekhar Vijendra
Chancellor

MESSAGE

I am delighted to extend my greetings to all the distinguished scientists, researchers, and academicians gathered at the prestigious International Conference on Innovative Research in Science and Technology (IRST-2023), organized by Shobhit Institute of Engineering & Technology (Deemed to-be University).

IRST-2023 signifies an important milestone in the pursuit of knowledge and innovation. It brings together brilliant minds from around the world, fostering a collaborative environment that encourages the exchange of ideas and the exploration of cutting-edge research across various domains of science and technology.

IRST-2023 presents an invaluable opportunity to showcase groundbreaking research findings, novel ideas, and technological advancements. It is a testament to the intellectual prowess and dedication of the participants who have devoted themselves to pushing the boundaries of knowledge.

To the participants, I encourage you to make the most of this enriching experience. Engage in vibrant discussions, forge new collaborations, and build networks that transcend borders and disciplines. May this conference serve as a catalyst for transformative research and open new pathways for innovation.

My sincere appreciation to the organizing committee for their tireless efforts in ensuring the success of IRST-2023. Their meticulous planning and unwavering dedication have made this conference a remarkable platform for knowledge dissemination.

I extend my best wishes to all the participants, researchers, and organizers for a fruitful and rewarding conference. May your interactions and discoveries at IRST-2023 contribute significantly to the advancement of science and technology, leaving a lasting impact on our world.

With best wishes,

Kunwar Shekhar Vijendra

Shobhit University

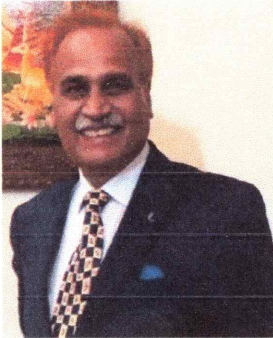**Shobhit Institute of Engineering & Technology, Meerut**
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Dated: 17-05-2023

MESSAGE

It gives me immense pleasure to know that 400+ scientists are presenting their research contributions in 3-day International Conference on "Innovative Research in Science & Technology (IRST-2023)" from 23-25th May, 2023 in hybrid mode Shobhit Institute of Engineering & Technology, Deemed to-be-University, Meerut, sponsored by AICTE, CSIR and other Government and non-Government agencies.

Innovation in Science & Technology is the foundation of economic power of any country. The current ongoing Russia-Ukraine war has witnessed the importance of innovation in research. US, China, Germany, Japan, U.K. are economic powers only because of Innovation and Research. Government of India has also realized the importance of innovation and research and the National Education Policy-2020 has been designed with this view point. I am happy that the organizers have selected this current topic for discussion in this conference where the presence of galaxy of scientists working in various fields of Science & Technology will facilitate the participants to interact with each other in a Kranti Dhara of India, a historical city of Meerut.

I welcome all participants.

Amar P. Garg
M.Sc., Ph.D., LL.B., F.B.S., F.P.S.I., F.S.M.P., M.N.A.Sc., F.N.R.S.,
CAS Fellow (U.K.), DAAD Fellow (Germany)
Vice Chancellor, and Former Sectional President Environmental Sciences (2020-23)
Former Professor & Head, C.C.S. University, Meerut, Former PVC, JNU, Jaipur
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Message

It is heartening to note that Shobhit Institute of Engineering & Technology (deemed-to-be-university), Meerut, U.P. is organizing an International Conference on Innovative Research in Science and Technology (IRST-2023) funded by AICTE and technically supported by STEM-Research Society, India during 23 – 25 May 2023.

The conference seeks to provide a platform to the researchers of varied domains of science & technology for fruitful interaction and exchange of ideas for furtherance of innovations and multi-disciplinary, inter-disciplinary & trans-disciplinary research. Such deliberations no doubt lead to useful associations & collaborations.

It is a matter of happiness to note that more than 300 participants shall be participating in this conference and present their research work. The speakers include seasoned scientists, researchers, and academicians from institutes of repute. The post-conference proceedings shall be published in Indexed Journals.

I convey my best wishes to the organizing team and wish a grand success to this three-day international conference. I am sure that the deliberations over three days shall be an enriching experience for all the participants.

Jai Hind

Prof. Ranjit Singh

Pro-Vice Chancellor
Co-Chairperson, IRST-2023
Shobhit Institute of Engineering & Technology
(NAAC 'A' Grade Accredited Deemed-to-be University)
Meerut, Uttar Pradesh, India

Prof. (Dr.) Jayanand

MESSAGE

"Research is seeing what everybody else has seen and thinking what nobody else has thought"
: Albert Szent-Györgyi

Realizing the gravity of the quintessential words of the Noble Laureate *Albert Szent-Györgyi* , Shobhit Institute of Engineering & Technology (NAAC 'A' Grade Accredited Deemed-to-be University), Meerut, strives to foster the young and dynamic intellects to not only be vigilant of their surroundings for the present day exigencies of the society but also develop their minds to think out of the box and confront sudden, unpredictable and capricious challenges that keep on surfacing on a daily basis.
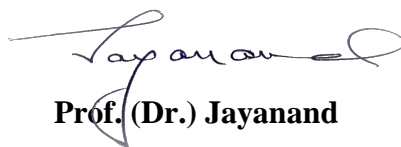
The recent era has been witnessing the severe contemporary predicaments along with the conventional jeopardies. The world has still not fully recovered from the aftermaths of the deadly COVID pandemic. Such situations put forth a need to develop an environment where interdisciplinary innovative ideas can be generated, nurtured and disseminated effectively for appropriate application and prevention of similar havoc, as correctly said that the future belongs to those who believe in the power of an open mind.

Ingrained with the philanthropic visions, and having a well-developed infrastructure with the state of art facilities the University has become a hub of a plethora of interdisciplinary researches and growth of scientific wisdom. The University is at present in a position to proudly aver its pivotal role in various sectors of researches and innovations that not only address the modern day challenges but also validate our ancient wisdom that are being practiced since ages. These researches have bestowed the University a significant position among the research and patents index of the country. Such brilliant findings need to be disseminated among the scholar society by and large in order to be fruitful for the mankind.

I sincerely appreciate the efforts of the organizing committee of the International Conference on Innovative Research in Science and Technology (IRST-2023), for coming up with this conference to converge the diverse scientific and academic minds for the mutual exchange of their valuable innovations and ideas in different areas of science, Engineering & Technology. The conference would also serve as a platform for the young minds of students and scholars for making them aware of the ongoing researches around the orb and helping them generate ideas regarding their contribution to the knowledge pool of the world for the welfare of mankind.

With all my best wishes, I congratulate the organizing team and wish the conference to accomplish its objectives and become colossally successful.

All the best!!

Prof. (Dr.) Jayanand

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Message

It gives me immense pleasure to know that Shobhit Institute of Engineering & Technology (deemed-to-be-university), Meerut, U.P. is organizing an International Conference on Innovative Research in Science and Technology (IRST-2023) during May 23-25, 2023. The conference is financially sponsored by AICTE and CSIR, New Delhi and technically supported by STEM-Research Society, India.

The 3-day conference will provide a platform to the academicians, researchers, industry professionals and policy-makers to disseminate their knowledge about various key domains of the conference. More than 300 participants from India and abroad will share their research contributions through oral and poster presentations on varied domains of science & technology. Besides this, a galaxy of experts invited from renowned institutions of country like IITs, NITs and Central Universities for fruitful interaction and exchange of ideas will open the new doors for academic and research collaborations. The post-conference proceedings shall be published in Indexed Journals as reference material for future generations.

I convey my best wishes to the organizing team and wish a grand success to this three-day international conference. I am confident that the deliberations over next three days shall be fruitful for the participants. The innovative ideas coming out from interactive technical sessions will also lead to emerging indigenous technologies for the benefit of society and will empower the nation.

Jai Hind.

Prof. V. K. Tyagi

Dean, Faculty of Engineering & Technology

MESSAGE FROM THE CONVENERS

It is our great pleasure to welcome you to International Conference on Innovative Research in Science and Technology (IRST2023) in a hybrid format which is supported by the financial grant from *AICTE*, Ministry of Human Resource Development and *CSIR, Ministry of Science &Technology, Government of India.* The International Conference on Innovative Research in Science and Technology (IRST-2023) aims to bring together bright minds from around the world to discuss, exchange, and share their ideas, expertise, and research findings in the interdisciplinary domain of science and technology. Organized by the University Faculty of Engineering & Technology, in association with STEM Research Society, the conference will provide a platform for fostering collaboration, promoting innovation, and enhancing the research community's engagement with national and international organizations. Based on the conference's theme and objectives, the six topics are proposed for the technical sessions: (1) Emerging Technologies and their Applications, (2) Sustainable Energy Solutions and Environmental Impact, (3) Biotechnology and Life Sciences, (4) Advanced Materials and Nanotechnology, (5) Innovations in Engineering and Technology Education, (6) Interdisciplinary Research and Collaboration. In addition, IRST2023 is very fortunate to have so many top quality panel, keynote speakers from around the world. This event sees participation from large number of young researchers and particularly women scientists which is an important aspect if we are to increase female participation in STEM (Science, Technology, Engineering, and Mathematics) areas. Conferences like these are only possible thanks to the hard work of a great many people and the successful organization of IRST2023 has required the talents, dedication and time of many volunteers and strong support from sponsors. Chairs of each event contributed exceptionally by attracting contributions, getting them reviewed, making accept and reject recommendations, developing the programs and so on. We are thankful to AICTE, Ministry of Human Resource Development and CSIR, Ministry of Science &Technology, Government of India.CSIR, Ministry of Science &Technology,Government of India. We also thank the National and International advisory committee. Publication of IRST2023 proceedings is not a simple task. Committee has contributed immensely. We are as ever grateful to the publishers for their dedication and professionalism in helping us produce what is an excellent and high-quality proceeding. We also give our sincere thanks to the management of the Shobhit Institute of Engineering and Technology (Deemed to be University) for providing the unconditional 24 x 7 support in all the spheres. Also,we would like to appreciate and thanks to all our colleagues on the Organizing Committee for their sincere work and support throughout the year. It only remains for us to thank all of you for participating in the conference and helping to make it a success. We hope that all of you will benefit from the extensive technical program (in online mode) and establish long lasting interactions with fellow delegates at IRST2023.

Dr. Tarun K. Sharma   *Dr. Rakesh Kumar Jain*

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Massage from Organizing Secretary

It is a matter of great pleasure to be a part of International Conference on Innovative Research in Science and Technology (IRST-2023) organized by Shobhit Institute of Engineering and Technology (NAAC 'A' Grade Accredited Deemed to-be University), Meerut during May 23-25, 2023, funded by AICTE & CSIR, Govt. of India and technically supported by STEM-Research Society, India. It has been a real honor and privilege to serve as the organizing secretary of the conference.

As the thrust areas of the conference 'IRST-2023' is very vast; the representatives from Technical Institutions and Industries of India & Abroad are expected to deliberate and share their knowledge and experience in the various emerging technological trends and innovations will be definitely energized and motivated from the conference. They can correlated their theoretical and practical knowledge with the recent innovations and technologies. Research scholars also can be updated their recent research work with the recent advancements & innovations in science and technology.

In addition, with keep in mind the dream of our Hon'ble Prime Minister Narendra Damodardas Modi Ji, regarding 'Make in India', 'Innovate India' and 'Star-up India', 'Material Science and Technology' has been incorporated as one of the main thrust areas of the conference. It is believed that this conference will definitely help in discussing the importance and new ideas in the race to make things stronger, cheaper, lighter, more functional and more sustainable, the manipulation of materials, their properties and processes as a key.

It is a pleasure to invite all participants and keynote speakers to the sports' Capital of India, Meerut. It is a "Historian Paradise", which stands at a strategic standpoint both geographically and culturally the city has played a pivotal role in the first spark of Indian Independence. We greet all the guest scholars in our campus and hope they would feel at home while their presence will brighten our corridors.

We are thankful to our publication partners MDPI (Separation), Elsevier (MTPR), Springer & Material Science Research India who responded to our request for publication and trusted the conference. We are grateful to all the authors who responded to our call for papers and trusted the conference with their work. The contributed papers highlight the current focus of research activities in different disciplines of Science & Technology.

The conference would not have been possible without the moral and financial support of Hon'ble Chancellor, Shobhit University. We are honored to have key note speakers from different top most Universities/Institutes in India & Abroad on this special occasion. We would like to express our deep gratitude to the members of the advisory committee, internal advisors and IRST-2023 team for their valuable opinion and expertise to ensure a very high quality conference program. We are thankful to our colleagues for their help to make it successful.

Dr. Aniket Kumar   **Dr. Jayanta Kumar Mahato**   **Dr. Sudheesh K. Shukla**

About the Conference

International Conference on Innovative Research in Science and Technology (IRST-2023)

The International Conference on Innovative Research in Science and Technology (IRST-2023) aims to bring together bright minds from around the world to discuss, exchange, and share their ideas, expertise, and research findings in the interdisciplinary domain of science and technology. Organized by the University, Faculty of Engineering & Technology, in association with STEM Research Society, the conference will provide a platform for fostering collaboration, promoting innovation, and enhancing the research community's engagement with national and international organizations. The conference is organized with a motivation to provide an excellent international open platform for the academicians, researchers, engineers, industrial participants and budding students around the world to share their research findings with the global experts.

The key intention of IRST-2023 is to provide opportunity for the global participants to share their ideas and experience in person with their peers expected to join from different parts on the world. In addition, this gathering will help the delegates to establish research or academic relations as well as to find international linkage for future collaborations in their career path. Outcomes of IRST-2023 will definitely lead to significant contributions to the research community of science and technology all through the world.

The main objective of the conference is to ignite and motivate the young dynamic researchers to carryout advanced level innovative research not only on their own research domain but also in the interdisciplinary domain of science and technology. Another objectives are: (a) to bring together leading academic scientists, researchers and research scholars from abroad and India to exchange and share their expertise and research findings about all aspects of Science, Engineering & Technology, (b) to provides the premier interdisciplinary open forum for scientists, researchers and academicians throughout the global to present their latest research findings, ideas, innovations, developments, and applications in all areas of science, Engineering & Technology, (c) to provide opportunities of open forum for collaboration with the national and international organizations of repute to the research community.

Peer reviewed and accepted articles of the conference will be published by the publishing partner: Elsevier (Materials Today: Proceedings), Springer Nature, Material Science Research India and Separations (MDPI). These publications will definitely add values in open literature domain.

About the Organizing University

Shobhit Institute of Engineering & Technology
**(NAAC 'A' Grade Accredited Deemed to-be-University),
Meerut, Utter Pradesh, India**

Shobhit Institute of Engineering and Technology (popularly known as Shobhit University, Meerut), is a NAAC accredited deemed to-be university u/s 3 of UGC Act, 1956. Ranked among the top institutions of India. The University aspires to make academic issues and commitments as the key concerns of the young generation and thereby, make a significant contribution to the academic developments wherever they are in the world.

We believe that the essence of the university is to create, integrate and disseminate better understandings of the world around us through knowledge. Recognizing that students and faculty shift between share all three roles, we challenge the notion that knowledge is static and insular. Instead, we welcome and enable a diverse and dynamic learning community of scholars, teachers, and learners.

We are committed to creating the best learning environment and provide the right equipment and facilities, to help our students to achieve their potential during studies. Our students learn in a variety of ways, including case studies, role-plays, and simulations. Because we know that no single approach can effectively address the range of challenges they'll encounter throughout their career, this diverse education is designed to give them the breadth and depth of skills and experience ther'll need for success.

We are a research- intensive University that shares the value of high-quality teaching within an environment of internationally competitive research. We seek to provide a creative and supportive environment in which ideas are generated and can flourish. To provide latest information about the things which are happening in science and Technology, the University strategically plans and organizes workshops, seminars, conferences, and brain storming sessions at national and international level with the help of experts from academia, industry, and research organizations.

University Training & Development Centre understand that active engagement of the industry with the academia is vital for developing the required skills in the future professionals. To facilitate the industry in the current scenario of the skill gap on one hand to enrich students with the industry exposure on the other hand; a one semester internship program has been incorporated in the course curriculum of maximum of the academic programs.

Today Shobhit University is a preferred destination for recruitment among young universities in India. More than 200 renowned corporate, Research Organizations and Institutions are patronizing our students by providing excellent job offers. The university has evolved into a Campus of Excellence. Our excellent talents are placed in the best of the corporate house in India and abroad.

The University has developed the following Schools and Centre; School of Engineering & Technology, School of Biological Engineering & Sciences, School of Business Studies; School of Law and Constitutional Studies; School of Education; School of humanities, Physical & Mathematical Sciences; Centre for Agriculture Informatics & Research; and Centre for Skill Development.

ABOUT STEM RESEARCH SOCIETY

The STEM-Research Society, a foundation is registered in the year 2020 to support and promote the research in the multidisciplinary domain under the able guidance of renowned academicians and researchers from India and abroad. The objective of the foundation is Scientific, Technical, Research and Educational in nature. The foundation strives to advance the theory, practice, and application of Science, Technology, and Engineering & Management and maintains a high professional standing among its members. The basic purpose of the STEM-RS is to bring together Researchers, Academicians, Industrialists and Experts from different parts of the country and abroad to exchange the knowledge and ideas at a common platform by organizing National and International events such as Conferences, Seminars and Workshops that unite the Science, Technology, Engineering and Management and topics which are not mentioned here for the empowerment of research and development.

Vision

The STEM-RS foundation will build a dynamic, interactive, global community of researchers, academicians and industrialists to advance excellence in Science, Technology, Engineering and Management.

Mission

The STEM-RS is a foundation of interested peoples worldwide that promotes research for the advancement of society in various spheres and the quality of life.

Values

Being visionary, dynamic, interdisciplinary, inclusive, egalitarian and promoting research in all spheres of human life. Diversity Statement

Diversity Statement

Diversity drives innovation. STEM-RS engage all demographic teams worldwide in advancing Science, Technology, Engineering and Management to improve the quality of life. Please keep visiting the website for recent updates: www.stemrs.in/

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S.No.	Manuscript ID	Title	Authors	Affiliation
1	IRST-2023-0002	Transverse mass (mT) Scaling of π^0 and η mesons at RHIC energies	Kajal, M. K. Singh, P. K. Khandai	GLA University, Mathura-281406, India Ewing Christian College, Allahabad 211003, India
2	IRST-2023-0003	Projectile Fragmentation Characteristics at Relativistic Energy	Babita Kumari, M. K. Singh	Institute of Applied Sciences and Humanities, GLA University, Mathura - 281406, India.
3	IRST-2023-0004	A Survey on Plant Disease Identification Using Machine Learning	Akansha Singh, Akshata Chavan, Anusha N, G Bhavani, Harish Kumar N, Deepak G	Dayananda Sagar College of Engineering Kumarswamy Layout, Bangalore 560078, Karnataka, India
4	IRST-2023-0006	Effect of pork ingredient ratio and mix recipe on sausage quality and customer perception	Ngoc Duc Vu, Bach Long Tran, Van Muoi Nguyen	Nguyen Tat Thanh University, Ho Chi Minh City, 700000, Vietnam, Can Tho University, Can Tho City 94000, Vietnam
5	IRST-2023-0007	Synthesis, Characterisation and Biological Activity of Mixed Ligand Thorium Complexes with Schiff Base and 8-Hydroxyquinoline	Saroj V. Mahulkar, Gurumeet C. Wadhawa, Arun K. Valvi, Vitthal S. Shivankar	"ICLES Motilal Jhunjhunwala College, Vashi, Maharashtra, India Veer Wajekar College, Phunde, Panvel, Maharashtra, India Annasaheb Awate College Manchar, Pune, Maharashtra, India Chhatrapati Shivaji College, Satara, Maharashtra, India"
6	IRST-2023-0010	Emission feature of the target fragments for $84Kr_{36}^+$Em interaction	U. Rawat, M. K. Singh, M. Goyal	Institute of Applied Sciences and Humanities, GLA University, Mathura - 281406, India.

7	IRST-2023-0012	Assessment of Seed-Borne Fungi of Sunflower (Helianthus Annuus L.) and their Application in Synthesis of Zinc Oxide Nanoparticles	Laxman R. Rathod, Namdev B. Pawar, Suresh Shendage, Gurumeet C. Wadhawa, Arun K. Valvi	Rayat Shikshan Sanstha's Mahatma Phule Arts, Science and Commerce College, Panvel, Navi Mumbai, India The Kelkar Education Trust's V. G. Vaze College of Arts, Science and Commerce, Mulund, Mumbai, India Rayat Shikshan Sanstha's, Veer Wajekar Arts, Science and Commerce College, Phunde, India Rayat Shikshan Sanstha's Annasaheb Awate Arts, Commerce and Hutatma Babu Genu Science College, Manchar, India
8	IRST-2023-0013	Preparing Materials for Societal Applications from Pulp and Paper Mill Black Liquor	Shrutikona Das, Richa Aggrawal, Swati Anand, Anshu Kumar Anupam, A.K. Dixit	Chemical Recovery and Biorefinery Division, Central Pulp and Paper Research Institute, Himmat Nagar, Saharanpur-247001, India
9	IRST-2023-0014	Multiplicity Characteristics of the Target Fragments and Shower Particles at Relativistic Energy	U. Rawat, M. K. Singh, M. Goyal	GLA University, Mathura-281406, India.
10	IRST-2023-0015	Automated Notarization System using Blockchain: A Systematic Literature Review on Existing Methodologies	G M Lohith, Ashwath S, Dushyanth V, Shreevatsa U Upadhyaya, Deepak G, Harish Kumar N	Dayananda Sagar College of Engineering kumarswamy layout, bangalore - 560 111, INDIA
11	IRST-2023-0016	Neutrino Physics with Reactor and Accelerator Experiments	S. Karmakar	GLA University, Mathura – 281406, UP, India Central University of South Bihar, Gaya - 824236, Bihar, India

12	IRST-2023-0017	Multiplicity Characteristics of the Target Fragments at Relativistic Energy	Babita Kumari, M. K. Singh	GLA University, Mathura-281406, India.
13	IRST-2023-0021	Identification of Charged Kaons in PHENIX Detector at RHIC	Kajal, P. K. Khandai, M.K. Singh	GLA University, Mathura, 281406, Uttar Pradesh, India Ewing Christian College, Prayagraj, 211003, Uttar Pradesh, India
14	IRST-2023-0024	Emission characteristics of the events emitted in forward-backward hemisphere in the interaction of 84Kr36^{+} Em 1 A GeV	B. Kumari, M. Sharma, M. K. Singh	Department of Physics, IAH, GLA University, Mathura - 281406, India
15	IRST-2023-0028	Computational Analysis of Pulsating Pipe Flow for Heat & Flow Characteristics Enhancement	Siddhanath V. Nishandar, Ashok T. Pise, Shrikant S.Madiwale	Government College of Engineering Karad, Kolhapur 415414,Maharashtra , India. Tolani Maritime Institute, Pune, 410507,Maharashtra, India
16	IRST-2023-0035	Impact of Gamma Radiation on Concrete Developed with Fibers	Prarthita Basu, Rajesh Kumar, Mukul Das	Shriram Institue for Industrial Research, Delhi 110007, India
17	IRST-2023-0041	A Review on Natural and Synthetic Polymers Used in The Preparation of Nanofibrous Scaffolds for Faster Wound Healing	Rajput A, Ghosh DP, Katiyar D, Mittal A, Kashyap M	JSS College of Pharmacy, Noida, Uttar Pradesh, IndiaKIET Group of Institutions, Delhi-NCR, Ghaziabad-201206, Uttar Pradesh,
18	IRST-2023-0042	Advantages of Implosion Technique in water treatment as compared to different treatment methods.	Basudev Singh, Jyoti Sharma, Deep Gupta	Shobhit institute of Engineering and Technology, Meerut UP, India (250110) University of Engineering and Technology Roorkee, (UETR)

19	IRST-2023-0043	Application of Metal Oxide Nanoparticles over Conventional Therapeutic Interventions: A Comparative Review	Soamyaa Srivastava	Shobhit University, Meerut.
20	IRST-2023-0049	Value-added utilization of fly ash waste from industries: A step towards sustainability	Sachin Kumar, Gaurav Manik	Indian Institute of Technology Roorkee, Uttarakhand, India
21	IRST-2023-0054	Experimental investigation and optimization of turning process parameters of AISI 5130 hardened alloy steel	Narendra Kumar Patel, Yogesh Dewangan	Dr. C. V. Raman University, Bilaspur 495113, India
22	IRST-2023-0055	Identifying and Understanding Resource Utilization with Load Balancing in Cloud Environment	Prathamesh Vijay Lahande, Parag Ravikant Kaveri	Symbiosis International (Deemed University), Pune, India
23	IRST-2023-0057	An Insight on Feature Extraction Techniques for Image Processing	Priyansh Tomar, Amisha Sharma, Abhishek Gupta, Arunesh Chandra	KIET Group of Institutions, Ghaziabad, Uttar Pradesh, India
24	IRST-2023-0069	Applications and Emerging Technologies for CVT: Review	Sonam Sirohi, Monika Dixit, Bhawna Sachdeva	Greater Noida Institute of Technology, Greater Noida
25	IRST-2023-0073	Arduino Uno Based Child Tracking System Using GPS and GSM	Monika Dixit, Gopal Bhardwaj, Khushi Kumari, Shreya Srivatava, Ginni Kumari	Greater Noida Institute of Technology Greater Noida, India

26	IRST-2023-0081	Hybrid-Optimization of CNC Milling Process parameters using Particle Swarm Optimization (PSO) and Cuckoo Search Optimization (CSO)	Bijan Mallick, SK Hikmat, Bidyut Karmakar, Abhijit Chakraborty, Pijush Dutta	Global Institute of Management and Technology, Krishnanagar, MAKAUT, W.B. India Greater Kolkata College of Engineering and Management, JIS Group, W.B. India
27	IRST-2023-0082	Experimental Investigation on Mechanical & Physical Properties of Waste High-Density Polyethylene Reinforced with Waste Glass Powder	Kidus Tesfay Areki, Sandeep Karnwa, Shravan Kumar Singh, Deepak Kumar Yaduwanshi	College of Engineering and Technology, Adigrat University, Adigrat, Ethiopia IIMT University, Meerut, U.P., India
28	IRST-2023-0083	Comparative Study on Zinc and Tin Oxide Nanoparticles Fabricated by Low-Cost Hydrothermal Synthesis	Shivangi Srivastava, N.K. Pandey, V. Verma, B. Kumar, P.K.Pandey, N. Yadav, P. Singh, A.K. Verma	University of Lucknow, Lucknow, U. P. (226007), India.
29	IRST-2023-0087	Machine Learning-Based Predictive Analysis of Metabolic Features for Polycystic Ovary Syndrome	B.Poorani, Rashmitha Khilar	Saveetha University Thandalam, Chennai.
30	IRST-2023-0091	Prediction of Surface Roughness of the Monel K-500 Using Stationary Wavelet Transform Method	Dilli Ganesh V, R.M. Bommi	Saveetha Institute of Medical and Technical Science-SIMATS, Chennai, India.
31	IRST-2023-0096	A Comparative Study of different Techniques to predict Maternal Morbidity and Mortality Model	Vanisha Mavi, Nidhi Tyagi	Shobhit Institute of Engineering & Technology, Meerut

32	IRST-2023-0098	Nonlinear stability analysis of Rayleigh – Bénard convection in a micropolar fluid with heat source/sink	Riya Baby	Department of Computational Sciences CHRIST (Deemed to be University), India
33	IRST-2023-0111	Scalability-Aware Hybrid Workflow Scheduling Algorithm for Cloud	Neeraj Arora, Kumar Rahul, Rohitash Kumar Banyal	Vardhman Mahaveer Open University, Rawatbhata Road, Kota, 324010, Rajasthan, India National Institute of Food Technology Entrepreneurship and Management, Sonipat, 131001, Haryana, India Rajasthan Technical University, Rawatbhata Road, Kota, 324010, Rajasthan, India
34	IRST-2023-0120	MAC Randomization Detection and Impact on IoT Devices	Konika Abid, Nishant Pathak	Shobhit Deemed-to-be University, Meerut
35	IRST-2023-0122	5G Enabled portable water monitoring analyzer for real-time Quality Analysis	Drishti Katiyara, Maitryee Choudhary, Nikhita Iyer,Radhika Katiyara, Sharmila Sengupta	VESIT, Mumbai, India
36	IRST-2023-0124	Development of Thermodynamic Model to predict the Thermodynamic parameters of SI Engine	Manikandan K, Ramabalan S	Anna University, Chennai, TamilNadu, India E.G.S Pillay Engineering College, Nagappattinam, Tamil Nadu, India
37	IRST-2023-0126	Fluorescene Chemo-sensor detection of Picric Acid: By Fluorescent Chemosensor (Nitro-Aromatic Compound): A Review	NAINSI, NIBEDITA BANIK	Chandigarh University, Mohali140413, Punjab INDIA

38	IRST-2023-0127	Rejuvenation of Water Bodies by Cownomics Treatment: A Critical Study in India	Rabinarayan Patnaik	Siksha 'O' Anusandhan University Bhubaneswar
39	IRST-2023-0129	Analysis and Design of Post-Tensioned Flat Slab considering Long Term Deflection using CSI Safe Software	Harpreet Singh, Aditya Kumar Tiwary, Nitesh Kushwaha, S. K. Joshi	Chandigarh University, Mohali-140413, Punjab, India.IES College of Technology Bhopal, 462044, Madhya Pradesh, India.Uttaranchal University, Dehradun-248007, India
40	IRST-2023-0131	Smart Rail-Gate Safety Alert System	S. Lakshmi Priyanka, B. Jaya Lakshmi Narayana, Y. Lakshmi Sahithi, K. Kavya	VR Siddhartha Engineering College, Vijayawada, A.P, India
41	IRST-2023-0132	Mechanical Properties of Recycled aggregate Concrete with GGBFS	Arpit Sethiaa, Shashi Ranjan Kumar	Oriental University, Indore, India 452001 IPS Academy Institute of Engineering and Science, Indore, India 452001
42	IRST-2023-0134	Enhancing the Security and Performance of Watermarking Techniques using Machine Learning	Ashish Dixit, R.P Agarwal, B.K Sharma	Shobhit Institute of Engineering and Technology (Deemed to be a University), Meerut, Uttar Pradesh, India.
43	IRST-2023-0135	Convolutional neural network implementation based on SMOTE and Data Augmentation for lung cancer diagnosis	Vanita G. Tonge, Asha Ambhaikar	Kalinga University, Naya Raipur, Raipur, India
44	IRST-2023-0136	Preliminary Diagnosis of Diabetes Through Comparative Analysis of Supervised Machine Learning Techniques	Md Imran Alam, Shams Tabrez Siddiqui, Haneef Khan, Nadim Rana, Malik	Jazan University, 4502, Jazan, Saudi Arabia Aligarh Muslim University, 202002, Aligarh, India

			Zaib Alam, Mohammad Rafeek Khan	
45	IRST-2023-0137	Evaluation of oxidative stress in Channa punctatus upon exposure to clomazone	Kalpana Singh, Vandana Garg	D.N. (P.G.) College, Meerut, Uttar Pradesh, India
46	IRST-2023-0138	Schiff's base assisted synthesis of silver nanoparticles for photocatalytic oxidation of methylene blue (MB) under UV light irradiation	Parul Singh, Vaishali Arora, Umesh Kumar	Deshbandhu College, University of Delhi,
47	IRST-2023-0141	Nanotechnology carriers for the management of glaucoma	Darsh Gautam, Poonam Talwan, Himanshu Chaurasia, Ranjit Singh	Himachal Institute of Pharmaceutical Education & Research, Bela, National Highway 88, Nadaun, Himachal Pradesh 177033, India.Shobhit University, Gangoh, Saharanpur, Uttar Pradesh 247341, IndiaQuantum University, Roorkee, Uttarakhand 247167, India.
48	IRST-2023-0142	Desirability Function Analysis Based Multi-objective optimization of Micro-ECDM Performances	Krishnendu Mondal, Bijan.Mallick, Jayanta Mahato, Bidyut Karmakar	Shobhit Institute of Engineering and Technology (Deemed to be University), Meerut, U.P, India Global Institute of Management and Technology, Krishnanagar, MAKAUT, W.B. India

49	IRST-2023-0143	Multi-Response Optimization of Electro Chemical Discharge Machining Performances during Micro-Machining Operation of Silicon-wafer.	Ravindra Naik, Bijan.Mallick, Sathisha N	Visvesvaraya Technological University, Belagavi, Karnataka, INDIA Yenepoya Institute of Technology, Moodabidri, Mangaluru, Karnataka,INDIA-574225. Global Institute of Management and Technology, Krishnanagar, MAKAUT, W.B. India
50	IRST-2023-0145	Enabling Multitask Learning in HTMs via ECG & Bitcoin Price Sequence Learning	Premanand Ghadekar, Chirag Vaswani, Anish Shaha, Vaibhavi Shetty, Vaishnav Sonawane	Vishwakarma Institute of Technology, Pune, India
51	IRST-2023-0146	Weather Based Plant Disease Prediction using Ensemble Learning	Premanand Ghadekar, Pankaj Kunekar, Pratik Dhame, Siddhesh Shinde, Rushikesh Sanjekar, Soham Dixit	Vishwakarma Institute of Technology, Bibwewadi, Pune 411037, India
52	IRST-2023-0147	Gender Recognition from Face images with HOG Feature Descriptor Using KNN and SVM	Ashjan Hamad Alsabhan, Nora Fantokh, Heba Kurdi	University of Hafr Al Batin, Saudi ArabiaKing Saud University, Riyadh, Saudi Arabia
53	IRST-2023-0148	Network Security Risks and Investigation of IoT Devices Using Digital Forensic	Malik Zaib Alam, Haneef Khan, Shams Tabrez Siddiqui, Md Imran Alam, Naved Alam,	Jazan University, 4502, Jazan, Saudi Arabia Jamia Millia Islamia, New Delhi, 110025, India.

			Sarfaraz Ahmad Wahaj	
54	IRST-2023-0155	Facial and Non Facial Based Image Forgery Detection and Localization	Premanand Ghadekar, Adwait Bhosale, Tejas Gadi, Kunjal Agrawal, Rehanuddin Qazi, Dhananjay Deore	Vishwakarma Institute of Technology, 666, Upper Indiranagar, Bibwewadi, Pune – 411037, India
55	IRST-2023-0161	A systematic review on malicious traffic detection using stochastic models	Aman Srivastava, Anurag Tiwari, Aradhana Tripathi	Department of Computer Science, B.B.D. Institute of Technology and Management
56	IRST-2023-0162	Deep Learning based severity detection of TMJ dysfunction	Shubhangi Zope, Rashmi Singh, Asmita Bhangare, Hrithika Singh, Sharmila Sengupta, Akshay Ranade	Vivekanand Education Society's Institute of Technology, Chembur, India Tooth Tickle Dental Clinic and Implant Centre Thane India
57	IRST-2023-0163	Automated Mental Health Analysis from Speech Signals with Data Augmentation in a Fog-Based Environment	S Rajarajeswari, Ananya Muralidhar, Angel Paul, Aishwarya R, Shriya BN,	Ramaiah Institute of Technology, Bangalore 560054, India

58	IRST-2023-0165	Reliability and Cost Assessment of Manufacturing Unit with Switching on Demand	Prawar, Anjali Naithani, H.D. Arora, Surbhi Gupta	Amity Institute of Applied Sciences, Noida 201303, India
59	IRST-2023-0172	Investigations on Mechanical Properties of Epoxy Hybrid Polymer Composites Reinforced with Carbon and Glass Fiber.	Dishant A. Wani, Shivprakash B. Barve, Sandeep Patil	Dr. Vishwanath Karad MIT World Peace University Pune, India 411038 University of Texas at Arlington,Texas, USA, 76019. Nissan Technical Center North America, Michigan, USA – 48331.
60	IRST-2023-0173	An Overview on Bioplastics Opportunities for Sustainable Development	Madhuri Pydimalla, Abhitha Suggal, Amulya Pathuri, Aman Dubey, Bulusu Venkata Sesha Praveen, Appala Naidu Uttaravalli	Chaitanya Bharathi Institute of Technology (CBIT), Hyderabad 500075, IndiaB V Raju Institute of Technology, Narsapur, Medak Dist. - 502313, Telangana, India.
61	IRST-2023-0176	Systems And Methods to Implement Smart Roof	Priyanka R. Bhatele, Sneha Jain, Soham S. Nimale, Sneha Bhat, Soham B. Gargote, Tanuj M. Somani, Somnath N. Ghadge.	Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India
62	IRST-2023-0178	Bi-LSTM based attention model with efficient tokenization for News Article Summarization	Kuldeep Vayadande, Adwait Bhosale, Dhananjay Deore, Tejas Gadi, Vishal Govindani,	Vishwakarma Institute of Technology, Bibewewadi, Pune, India

			Rehanuddin Qazi	
63	IRST-2023-0182	Histopathological Image based Oral Pre-Cancer Grading using Machine learning	Palak Garg, Samita Kanojia, Riya Shukla, Akhil Chakkungal, Sharmila Sengupta, Akshay Ranade, Tabita Joy Chettiankandy, Manisha Ahire Sardar, Shrijha G, Harsha Karwa	Vivekanand Education Society's Institute of Technology, Chembur, Mumbai, India Tooth Tickle Dental Clinic and Implant Centre, Thane, India Government Dental College & Hospital, Mumbai, India
64	IRST-2023-0188	IoT, A Driving Force to Connected Things: Issues and Challenges	Ruchi Bhatnagr, K.K. Sharma	IIMT University, Meerut
65	IRST-2023-0193	CO2 Laser Optimization for minimizing surface roughness and HAZ in Laser Cutting process of Hastelloy C-276	Sagarkumar J. Aswar, Nilesh Diwakar, S. D. Kalpande	RKDFIST, SRK University, Bhopal, India. GCOERC, Nashik, India.
66	IRST-2023-0195	A Review of the Use of Machine Learning Algorithms to Handle Big Data Classification Problem.	Rajesh Pandey, Mamta Bansal, Yogesh Awasthic	Shobhit University, Meerut and 250110, India Africa University, Mutare, Zimbawbe
67	IRST-2023-0198	Study of photonic crystal fiber modeling using COMSOL for sensor design	Sarbjit Singha	Chandigarh University (Gharuan)-Mohali-140413, Punjab, India.

68	IRST-2023-0209	A Comparative Study on Rainfall Prediction Models Using Machine Learning Techniques.	Arsal Yoosuf, Riddhima Chodhary, Aditi Singh, Jitendra Singh	Sharda University, plot no 32, 34, Knowledge Park III, Greater Noida, 201310, Uttar Pradesh
69	IRST-2023-0220	Numerical Investigation for Evaluating the Wind Effects on Interferences of High-Rise Buildings Having Varying Cross-Sectional (Fish) Shape	Pawan Prakash, Deepak Sharma, Ritu Raj	Delhi Technological University, Delhi, India
70	IRST-2023-0221	Material recycling as one of the stages of the life cycle on the ecological building	Szafranko Elżbieta	Institute of Geodesy and Civil Engineering, University of Warmia and Mazury in Olsztyn, Heweliusza str. no 4, 10-724 Olsztyn, Poland
71	IRST-2023-0222	Blockchain IoT hybrid framework for security and privacy a healthcare database network	Puneeta Singh, Shraddha Sagar, Balamurugan Balusamy	Galgotias University Greater Noida, India Shiv Nadar University, Delhi-National Capital Region, India
72	IRST-2023-0223	Cost effective analysis of soil by virtue of electrochemical sensors	Harsh Goyal, Ayushi Singh, Faizan Waris Khan, Puneeta Singh	Kiet Group of Institutions, Ghaziabad
73	IRST-2023-0226	Booking system for small businesses incorporating MONGODB, NODE JS, REACT JS, EXPRESS JS in the web application	Syed Zainul Abdin, Vidhi Porwal, Vipin Deval	KIET Group of Institutions Ghaziabad, India

74	IRST-2023-0231	Scalable Web Application Development	Paras Gupta, Mohammad Arsh, Satyam Mishra, Lavanya Gupta, Kohina Pandey	KIET Group of Institutions Ghaziabad
75	IRST-2023-0232	Violence Detection Based on Multisource CNN	Narenthira Kumar Appavu C.Nelson Kennedy Babu	Saveetha School of Engineering, Saveetha Institute of Medical andTechnical Sciences Tamilnadu,India
76	IRST-2023-0233	Violence Detection in Schools Based on Multi	Narenthira Kumar Appavu	Saveetha School of Engineering, Saveetha Institute of Medical andTechnical Sciences Tamilnadu,India
77	IRST-2023-0236	COVID-19 diagnosis using AI Deep Enhanced ResNet model from Chest X-ray images	C.Nelson Kennedy Babu	Saveetha School of Engineering, Saveetha Institute of Medical andTechnical Sciences Tamilnadu,India
78	IRST-2023-0237	AI Deep Learning CNN and Machine Learning SVM for Elderly Care	Narenthira Kumar Appavu	Saveetha School of Engineering, Saveetha Institute of Medical andTechnical Sciences Tamilnadu,India
79	IRST-2023-0240	Design and Development of a Deep Learning Based Resume Analyzer for Enhancing Recruitment Processes	Moniesh S, Subashree K, Dhanabal S, Kanagasabapathi K	Dr Mahalingam college of engineering and technology, Pollachi, Tamilnadu,India
80	IRST-2023-0246	Hybridized Genetic Algorithm for Double Resource Flexible Job Shop Scheduling Problem	Sumika Jain, Tarun Km. Sharma, Vinod Kumar	Shobhit University, Gangoh Shobhit University, Meerut

81	IRST-2023-0249	Breast Cancer Diagnosis Using Machine learning Algorithms	Muskan Gupta Mansi Keshari Kashish Tibrewal Ms Garima Singh	KIET Group of Institutions, Delhi NCR, Ghaziabad, India
82	IRST-2023-0250	Fire & Gas Leakage Detection Using Arduino	Priyanka Bhatele, Devang Shirode, Satyajit Shinde, Piyush Shingankar, Harshal Shirsat, Shivam Mattoo, Yash Shirsat	
83	IRST-2023-0267	Chitosan Hydrogels for Biomedical Applications- A Review	Muskan Gupta Mansi Keshari Kashish Tibrewal Ms Garima Singh	KIET Group of Institutions, Delhi NCR, Ghaziabad, India
84	IRST-2023-0268	Comparative experimental investigation of infill pattern and infill density on modelling process characteristics and mechanical properties of Polylactic Acid (PLA) material in Fused Deposition Modelling (FDM)	Rupesh Chalisgaonkar, Sachin Rathore, K.L.A. Khan	KIET Group of Institutions, Delhi-NCR, Ghaziabad,India

85	IRST-2023-0269	Advanced medicine reminder system	Amit Kumar Singh, R.Deepika, P.Savitha, P.S.Keerthana, B.Snega, Shiva Sharma	VSB Engineering College, Karur and 639111, India Shobhit University, Meerut and 250110, India
86	IRST-2023-0270	Advent Of an In-Vitro Bioanalytical Approach For Vilazodone In Biological Matrices Uses Modified QuEChERS And LC-MS/MS	Chintan Singha, Jyoti Sharmab, Biswa Prakash Nayaka, Prateek Pandyaa, Himanshu Khajuriaa	Amity University, Sector-125, Noida, U.P., 201301, India. Shobhit Institute of Engineering and Technology (Deemed to-be University), Meerut, U.P.,250110, India.
87	IRST-2023-0271	Dielectric studies of a new $0.5Ba_{0.8}Ca_{0.2}TiO_3.0.5CaCu_3Ti_4O_{12}$ composite fabricated by chemo-mechanical process	Gajendra Singh Lodhi, Jyoti Sharma, Laxman Singh, Pooja Gautam, Arvind Kumar Bharti, Preeti Tiwari, K D Mandal .	Shobhit Institute of Engineering and Technology (Deemed to be University) Meerut UP, India (250110)R. R. S. College Mokama, Patliputra University, Bihar-811302, IndiaPranveer Singh Institute of Technology, Kanpur, Uttar Pradesh, IndiaAxis Institute of Technology and Management Kanpur, Uttar Pradesh, IndiaGovernment Geetanjali Girls College Bhopal MP IndiaIndian Institute of Technology BHU Varanasi UP India
88	IRST-2023-0273	Fake News Detection using LSTM and Logistic Regression	Utkarsh Midha, Ujjwal Kumar, Tripti Saloni, Hriday	KIET Group of Institutions, Ghaziabad, India

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Gupta

89	IRST-2023-0275	Smart agriculture system: A miniaturization approach based on IoT	Rakhi Bhardwaj, Shiv Narain Gupta, Dheeraj Gupta, Seema Kumari, Ujala Prajapati	Shobhit Institute of Engineering and Technology (Deemed to be university), Meerut - 250110, India Greater Noida Institute of Technology, Plot No.7, Knowledge Park-II, Gautam Buddh Nagar, Uttar Pradesh 201306, India
90	IRST-2023-0276	Implementation of Welfare DOAM	Swati Joshi, Nidhi Karkera, Nidhish Wakodikar, Ashish Nikam, Mrunal Nikam, Shreyash Nikhare	Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India
91	IRST-2023-0277	Development and Validation of a QuEChERS-Based LC-MS/MS Method for Determination of Didanosine from Biological Matrices	Priyanka Gopi, Chintan Singh, R K Sarin, Prateek Pandya	Amity University, Sector-125, Noida, U.P., 201301, India National Forensic Science University, Curti, Ponda (Goa), India
92	IRST-2023-0279	Polycystic Ovarian Syndrome (PCOS) identification and diagnosis using Machine Learning	Priya Agarwal, Shivangi Maurya, Prashant Singh, Mrityunjay Anand Verma, Anuraj Malav	KIET Group of Institution, Muradnagar, Ghaziabad, Uttar Pradesh, 201206, India

93	IRST-2023-0287	A Study on New Radiochromic film (Gafchromic) for Ultraviolet Radiation	Pradeep Goswami, Rakesh Kumar Jain, S. Choudhary, Brijesh Goswami, Suresh Yadav	Shobhit Institute of Engineering and Technology Modipuram, Meerut-250110 (U.P.), India Institute of Nuclear Medicine and Allied Sciences, New Delhi-110054, India SAM GLOBAL University Bhopal-462046 (M.P.), India Subharti Medical College, Meerut-250005 (U.P.), India Gandhi Medical College, Bhopal462001 (M.P.), India
94	IRST-2023-0288	Short review: To Enlight the Enabling Factors for Aluminium at 2030	K. S. Srin, R. Nigam, J. Ramkumar, Ravi Bathe	Indian Institute of Technology, Kanpur, Uttar Pradesh, India. International Advanced Research Centre for Powder Metallurgy and New Materials, (ARCI), Hyderabad, Telangana, India. Government Engineering College Wayanad, Kerala, India.
95	IRST-2023-0290	Artificial Intelligence and Cloud Computing based Model And Design of E-Vehicles Integrated With Wireless Technology And Sensors	Kazi Kutubuddin Sayyad Liyakat, Kosgiker Gouse Mohiuddin, Mardanali, Chand Shaikh	Brahmdevdada Mane Institute of Technology, Solapur, Maharashtra, India,
96	IRST-2023-0293	Weight Sensor Device to Perform Physical Science Experiments by Students with Visual Impairment	M.Revathi, G.Victoria Naomi	Avinashilingam Institute for Home Science and Higher Education for Women, Coimbatore -641043

97	IRST-2023-0295	Characteristics and Major Applications of Mobile Ad-hoc Networks	Tanay Jaiswal, N.R.Kidwai	Integral University Lucknow, India
98	IRST-2023-0296	Moringa Oleifera in Drug Delivery	Arshdeep Kaur, Nibedita Banik	Chandigarh University, Gharuan, Mohali-140413 (Punjab), India
99	IRST-2023-0298	A Novel Algorithm for A Framework of Big Data In Cloud Environment	Hriday Kumar Gupta, Rafat Parveen	Jamia Millia Islamia, New Delhi
100	IRST-2023-0299	Minimizing Makespan using Hybridized Genetic Algorithm with Tabu Search for Flow Shop Scheduling Problem	Sumika Jai, Tarun Km. Sharma, Varun Bansal	Shobhit University, Meerut Shobhit University, Gangoh
101	IRST-2023-0301	Ensemble Model for Strawberry Plant Diseases Detection and Classification	Godithi Sri Lakshmi Prasanna, Vivek Rao, Deevireddygari Jagadeeswara Reddy, Somawar Antesh, Sankuri Naveen, Gurbakash Phonsaf	Lovely Professional University, Phagwara, Punjab, India
102	IRST-2023-0304	Analysis of thermal behaviors of pits reinforced polymer composite	Rajat Yadav, Sandeep Singh, Gaurav Thakur	GLA University, UP, Mathura, India Chandigarh University, Mohali 140413, India Uttaranchal University, Dehradun-248007, India
103	IRST-2023-0307	A study on mechanical properties of Ni-based superalloy 718 at elevated temperatures	Raj Kumar, Ashutosh Kumar, G. A. Harmain, Mohammad Mursaleen	National Institute ofTechnology Srinagar, Hazratbal, Srinagar, Kashmir - 190006, (India)

104	IRST-2023-0308	Design and Implementation of Waste Gas Decay & Disposal System on FPGA	Brijesh Kumar Sharma, Sharmila Petkar	BRIT/BARC/RMC/Medical Cyclotron Facility, Parel, Mumbai, 400012, Maharashtra, India. D Y Patil University, Sector-7,Nerul , Navi Mumbai, 400706, Maharashtra, India.
105	IRST-2023-0310	Clothing Rental System	Puja A. Chavan, Prasad Mahajan, Tanish Mahatme, Ratnesh Mekhe, Vinit Mundhada	Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India
106	IRST-2023-0312	Simulation Research on Improvement of Voltage Stability of DFIG based Wind Farm Connected to Grid Using TCSC and STATCOM Controllers	Pramod Kumar Kaushal, Aruna Bansal	Swami Vivekanand Subharti University, Meerut, Uttar Pradesh, India
107	IRST-2023-0326	Novel, Energy Efficient Routing Protocol for Dynamic Data Transfer in Wireless Sensor Networks	Jagannadha Swamy Tata, Sai Anirudh Ambati, Krishna Sai Tejaswini Thanneru, Joshua Nanneti	GRIET, Hyderabad, 500090, India,
108	IRST-2023-0331	Vulnerability Analysis Framework For AI-Based IoT Medical Device Data	Jayapriya J, Vinay M	Christ (Deemed to be University), Bangalore 560075, Karnataka, India
109	IRST-2023-0332	HARMONIC FILTERS DESIGN FOR NONLINEAR LOADS AND THD MEASUREMENT	Km Brajesh, Kirti Pal, Munna Khan	Gautam Buddha University, Greater Noida, U.P., India 201312 Jamia Millia Islamia New Delhi 110025

110	IRST-2023-0340	Techno-economic analysis of hybrid standalone systems for electrification of a remotely located village in India	Ameer Faisal, Naqui Anwer	TERI SAS, New Delhi KIET Group of Institutions, Delhi NCR, Ghaziabad
111	IRST-2023-0342	The Aftermath of COVID-19	Himanshi Chaudhary, Pooja Sharma, Sanjukta Vidyant	IIMT University
112	IRST-2023-0345	Skin Cancer detection based on Deep Learning Network Architecture- An Analysis and Review	Firoz Warsi, Priyesh Tiwari, Rakhi Bhardwaj, Anil Kumar Dubey	Galgotia University, Greater Noida, India Greater Noida Institute of Technology, Greater Noida, India
113	IRST-2023-0349	Drought Vulnerability Assessment in Chennai Aquifer Region: A Remote Sensing-GIS approach	Advaith Jayan, Anagha V.S., Alka Singh	Amrita Vishwa Vidyapeetham, Amritapuri, India
114	IRST-2023-0354	A Two-stage Mammogram Enhancement Technique for Mass Detection	Romesh Laishram, Rinku Rabidas	Manipur University, Canchipur, Manipur, India Assam, University, Silchar, Assam, India
115	IRST-2023-0358	Dynamic Economic Load Dispatch for Thermal and Wind Generator with Ramp, Reserve Constraints	Arika Singh, Hemant Ahuja, Kirti Pal, Vaibhav Raj Singh	Krishna Institute of Engineering and Technology, Ghaziabad, Uttar Pradesh, IndiaAjay Kumar Garg Engineering College, Ghaziabad, Uttar Pradesh, IndiaGautam Buddha University, Greater Noida, Uttar Pradesh, India
116	IRST-2023-0360	IOT Enabled Home Automation and Security System	Dharmendra Raikwar, Bhavya Aggarwal, Arpit Bansal, Arun	KIET Group of Institutions Ghaziabad, India

			Kumar Singh, Sharad Gupta	
117	IRST-2023-0369	Security of digital images using hybrid approach of chaos theory and Josephus Traversal	Manzoor Ahmad Lone, Shaima Qureshi	University of Kashmir, Srinagar National Institute of Technology, Srinagar
118	IRST-2023-0370	IOT Based Smart Parking System	Supriya S. Telsang, Om Jaiswal, Priten Jaiswal, Radhika Jaju, Nikita Jakapure, Shanvi Jakkan, Janhavi Awari	Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India
119	IRST-2023-0371	User Authentication by Free-text using Deep Learning	Namisha Bhasin, Sanjay Kumar Sharma, Rajesh Mishra	Gautam Buddha University, Greater Noida, Uttar Pradesh, India
120	IRST-2023-0372	Numerical simulation of methylammonium tin bromide-based perovskite solar cells	Paramita Sarkara, MD Arbasa, M. Srujan Patila, K. Rahul Naik	B V Raju Institute of Technology, Narsapur, Telangana 502313
121	IRST-2023-0373	Boosting Learning Disability Prediction Accuracy: A Comparative Analysis of Machine Learning Models and Hyperparameter Tuning Techniques	Anu P J, K. Ranjith Singh	Karpagham Academy of Higher Education, Coimbatore

122	IRST-2023-0374	Weldment Characteristics of Aluminium Matrix Composites Welded by Advanced Welding Technique: A Review	Jitender K. S. Jadon, Sushovan Basak, Jayanta K. Mahato	Shobhit Institute of Engineering and Technology (Deemed to-be University), Meerut -250110, U.P., IndiaC. V. Raman Global University, Bhubaneswar, Odisha - 752054, India
123	IRST-2023-0375	Optimizing Decision Tree Classifier for Multi-Class Classification in Bank dataset For Improving the Performance Matrices.	Sufaira Shamsudeena, K. Ranjith Singh	Karpagham Academy of Higher Education, Coimbatore-641 021 MES College Marampally, Aluva, Ernakulam
124	IRST-2023-0379	Impact of FSW tool and process parameters on Aluminium 5083 and 6082 Alloys	H.M.Anil Kumar, V.Venkata Ramana, Mahendra KC, Sreenivasa CG,	Ballari Institute of Technology and Management, Ballari 583101, VTU, Belagavi, India, UBDTCE, Davanagere, Karnataka, India.
125	IRST-2023-0380	Waste heat recovery potential of VCR engine: Alcohol-Diesel blend	R. Jaiswal, V.P. Mishra, P. Mondal, S. Barman	National Institute of Technology, Sikkim, India IIEST, Shibpur,Kolkata, West Bengal, India
126	IRST-2023-0384	Evaluation of Free Radical-Scavenging and Nitric Oxide Inhibition Activities of Selected Medicinal Plants	Km Reeta, Alpana Joshi	Shobhit Institute of Engineering & Technology, (Deemed-to-be University), NH-58, Modipuram, Meerut - 250 110
127	IRST-2023-0385	A Two Stage Image Denoising Using Superpixel Algorithm	Jana Bhaskara Rao, T.Yaswanth Ganesh, P Lakshmi Madhumitha, E .Manikanta Sai, T.	Anil Neerukonda Institute of Technology and Sciences, Visakhapatnam, 531162-India

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128	IRST-2023-0389	State of The Art Techniques for Increasing the Quality of Concrete Made With Recycled Aggregate	Firas F. Jirjees, Khaleel H. Younis, Shna Jabar Abdulkarim, Shelan M. Maruf, Ganjeena J. Khoshnawa,	Erbil Polytechnic University, Erbil, Kurdistan Region 44001, Iraq Tishk International University, Erbil, Iraq University of Raparin, Rania, Kurdistan Region 46012, Iraq
129	IRST-2023-0394	Green synthesis of Copper Oxide nanoparticles from Rudraksha extract for photocatalytic degradation of Methylene Blue under sunlight	Shivani Gupta, Himanshu Narayan, Rakesh K. Jain	Shobhit Institute of Engineering & Technology, Modipuram, Meerut 250 110, India Usha Martin University, Angara, Ranchi 835 103, India
130	IRST-2023-0396	Notes and Password Manager	Lavanya Rao, Samyukta D Kumta	PES University, RR Campus Bangalore -560085, India
131	IRST-2023-0397	Emojify facial Expression Detection using Deep Learning.	Prajjwal Yadav, Prateek Gupta, Rishabh Singh, Satya Prakash Singh	KIET Group of Institutions Ghaziabad, India
132	IRST-2023-0399	A Novel on Performance Analysis of Proton Exchange Membrane Fuel Cell System with Metaheuristic Optimization based MPPT Controller	Ramesh Kumar V, V. Prashanth, Shaik. Rafikiran, CH Hussaian Bashad, K. Ramakrishna Reddy	Don Bosco Institute of Technology, Karnataka, 560074, India Meenakshi Institute of Technology (Autonomous), Banglore, 560064, India Sri Venkateshwara College of Engineering (Autonomous), Tirupati, AP, 517502, India

133	IRST-2023-0407	Remote sensing scene classification using Convolution neural network	V Karthick, Aiswarya M C, Sruthi R, Jayavarshini G R	Velammal College of Engineering and Technology Madurai, India
134	IRST-2023-0408	Review of thermal spray coatings perform in protecting boiler steels against corrosion at high temperatures	Binu Kumar Bhagria, Khushdeep Goyal, Dharampal Deepak	Punjabi University, Patiala, Punjab, India, 147002
135	IRST-2023-0411	Navigation Stick for The Visually Impaired	Mary Riddhima Reddy, Niranjan Kannanugo, Vandit Kala, Shailesh S and Ajay Kumar Singh	Jain (Deemed-to-be University), Jakkasandra Post, Kanakapura Taluk, Ramanagara District, Pin. 562112, India
136	IRST-2023-0412	Deep Learning-Based Detection of Leaf Diseases for Sustainable Agriculture	Akshith Reddy Jonnalagadda, Dimple Potha, Jushandra Kumar Palla, Karthik Kasani and Ajay Kumar Singh	Jain University, Karnataka, India
137	IRST-2023-0414	Camera Vision Based Garbage Categorization and Detection	Buvana M, Muthumayil K	College of Engineering and Technology, Dindigu,Tamil Nadu. PSNA College of Engineering and Technology,Dindigu,Tamil Nadu.
138	IRST-2023-0422	Smart Glasses for Blinds using Arduino	Bhawna Sachdeva, Vishwjeet Singh, Shreyanshi Kant, Aryan Gupta	Greater Noida Institute of Technology Greater Noida, India

139	IRST-2023-0428	Nanocellulose for Biomedical Applications: A Review	Anisha Bhosle, Suraj R. Karanjikar	Shri Guru Gobing Singhji Institute of Engineering and Technology, Vishnupuri, Nanded 431606, India
140	IRST-2023-0429	Modelling and Evaluation of Ride Sharing using Machine Learning and Desirable Algorithms.	Jimil Digaswala, Anushka Mukherjee, Gracika Jain, Prasan Mittal, Suguna M	Vellore Institute of Technology, Chennai, India
141	IRST-2023-0430	Short-Term Electrical Load Forecasting using ARIMA and LSTM	Vinay Khanduri, P. Mahalakshmi	Vellore Institute of Technology, Vellore
142	IRST-2023-0432	Dynamic Programming for Optimized Hybrid Data Compression using Huffman Coding and Lempel-Ziv-Welch Algorithm	Shakalya Garg, Shashwata Samanta, Kaustubh Dwivedi, Ravulapalli Sai Krishna, Suguna M, Om Kumar C.U.	Vellore Institute of Technology Chennai, India
143	IRST-2023-0438	Intelligent prediction of quality of water using machine learning	Gajula Parimala Sudha, Julia Punitha Malar Dhas	Karunya Institute of Technology and Sciences Coimbatore, India
144	IRST-2023-0441	A Comprehensive Review on the Recent Advances in Heat Exchanger Efficiency Enhancement	Abhijeet kumar Raushan, Rakesh yadav, Santosh Kumar, Geetesh Goga, Ravindra Mohan	IES College of Technology, Bhopal, India. Chandigarh Group of Colleges, Landran, Mohali, Punjab, India. Bharat Group of Colleges, Sardulgarh,Punjab, India.

145	IRST-2023-0442	A Comprehensive Review on Noma-Based Backscattered Communication In 5G Architecture	Neeraj Dwivedi	Amity University
146	IRST-2023-0444	Sensor Based Gas Leakage Detection with an Alert and Control System	Vikas J Nandeshwar, Harshal Chaudhari, Vaishnavi Chate, Astha Chaudhari, Atharva Chaudhari, Bhavesh Chaudhari, Harsh Chaudhari	Vishwakarma Institute of technology, Pune, India
147	IRST-2023-0445	Corrosion-resistant nanostructured superhydrophobic coating for Mg alloys: Rudiments, mechanism, and recent advances.	Udit Gupta, Kailash Pandey, R.K. Jain, Rajeev Gupta	Shobhit Institute of Engineering & Technology, Meerut- 250110 Uttar Pradesh, India School of Engineering Studies, University of Petroleum & Energy Studies, Dehradun-248007, Uttarakhand, India
148	IRST-2023-0447	XGBoost classifier and feature selection method using Breast Cancer Detection	Vaishnawi Priyadarshni, Sanjay Kumar Sharma	Gautam Buddha University, Greater Noida, India
149	IRST-2023-0448	Energy Evaluation and Performance using time depended Fuzzy Logic Base Algorithm in Distributed Computing 5G Networks	Kamlesh Kumar Verma, Rajesh K. Saini	Bundelkhand University, Jhansi, UP

150	IRST-2023-0453	Distinguishing Identical Twins using Face Recognition	Sallagunta Raahul, Tharun Chamarthi, C.P. Shirley, Ippala Murali Srinivasa Reddy, Kadivella Moneesh Sai	Karunya Institute of Technology and Sciences, Coimbatore,Tamil Nadu, India
151	IRST-2023-0454	Polymer Nanocomposite for Energy Storage Applications	Anmol Rajpoot, Nibedita Banik	Chandigarh University, Gharaun, Punjab 140413, India
152	IRST-2023-0461	Hand Gesture vocalizer	Himani Garg, Ankit Jha, Aman Singh, Akash Maurya	ABES Engineering College, Ghaziabad India
153	IRST-2023-0462	Implementation of an Intelligent Controller for Optimal Location and Sizing of DGs in a Radial Distribution System	Rajesh Kumar, Abhinav Saxena, Aniket Kumar, Rangma Tiwari, Vineeta Kumari, Nishant Singh, Somanshu Rai	JSS Academy of Technical Education Noida, IndiaShobhit Institute of Engineering and Technology, Deemed to be University, NH Modipurum, Meerut 250110, India
154	IRST-2023-0469	A review of hybrid micro-machining: State of art approach	Nanaji Kshirsagar, R. M. Tayade, S. G. Solanke	Fr. C. Rodrigues Institute of Technology, Vashi, Navi Mumbai 400703, India Veermata Jijabai Technological Institute, Mumbai 400019, India
155	IRST-2023-0470	Optimization of MANET Routing Protocol using Radial Basis Functions (RBF)	Anil Kumar, Disha Handa, Vikas Jalodia	Chandigarh University, Punjab, India

156	IRST-2023-0472	Effect of Quaternary Blend Cement on fresh properties of High-Performance Concrete	Absar Yousuf Wani, Mohit Bhandari	Chandigarh University, Gharuan, Mohali (Punjab), India
157	IRST-2023-0476	Mapping Vulnerable Areas for Saltwater Intrusion: An application of the GALDIT framework	Devu S Kumar, Alka Singh, Dipankar Dwivedi	Amrita Vishwa Vidyapeetham, Amritapuri, India Lawrence Berkeley National Laboratory, Berkeley, CA, USA
158	IRST-2023-0478	An Intelligent Approach for for placement of Optimal Capacitor in Radial Distribution System	Rajesh Kumar, Abhinav Saxena, Aniket Kumar, Khushi Kashyap, Garima Pandey, Abhinav Gangwar	JSS Academy of Technical Education Noida, India Shobhit Institute of Engineering and Technology, Modipurum, Meerut 250110, India
159	IRST-2023-0479	A Brief Study and Analysis of Various Sustainable Energy Resources for Its Efficiency	Abhinav Saxena, Rajesh Kumar, Aniket Kumar	JSS Academy of Technical Education Noida, India Shobhit Institute of Engineering and Technology, Deemed to be University, NH Modipurum, Meerut 250110, India
160	IRST-2023-0480	Investigating the Mechanical Properties of Sisal/Areca/Sisal Natural Fiber Reinforced Composite Material Treated with NaOH and Filled with Al2O3 and TiO2	Shaikh Zeeshan Akila, Anil S. Maheshwari	Sandip University, Nashik (MH, Ind)

161	IRST-2023-0482	Speed Limit Indicator	Mayuri M Gawade, Rudrabhishek Choudhury, Shreyas Ruikar, Rushi Mahamune, Vaishnavi Sabale, Siddhesh Sabnis, Sachi Chakrabarti	Vishwakarma Institute of Technology, Pune, 411037, Maharashtra, India
162	IRST-2023-0490	Effect of Micro and Nano Reinforcement Materials on Mechanical Properties of Aluminum Matrix Composites: A Comprehensive Review	Akriti Goswami, Jyoti Sharma, Dharmesh Kumar, Jayanta Kumar Mahato	Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, Uttar Pradesh-250110, India
163	IRST-2023-0491	Design and Analysis of 7MW Rated Power Wind Turbine for Delhi location (28064' N, 77012' E)	Sachin Kumar	UIET, MDU, Rohtak (India)
164	IRST-2023-0492	Comparative Investigation on Mechanical Properties of AMCs Fabricated through Liquid and Solid-State Fabrication Process	Dharmesh Kumar, Vansh Shekhar, Akriti Goswami, Jitender K. S. Jadon, Sanjay Kumar, Jayanta Kumar Mahato	Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, Uttar Pradesh-250110, India.
165	IRST-2023-0497	A Hybrid Optimization Technique for Maximizing Photovoltaic Power Supply Efficiency	Akshara Ganesh Ram, Aman Mandal, CH Hussaian Basha, Rani C Naidu	VIT University, Vellore, 632014, India NITTE Meenakshi Institute of Technology, Bangalore, 560064, India

166	IRST-2023-0499	Novel Face Detection And Emotion Recognition Model Using Correlation Attention Module Based Deep Convolution Neural Network	Manisha Balkrishna Sutar, Asha Ambhaikar	Kalinga University, Raipur, Chhattisgarh, India
167	IRST-2023-0500	Comprehensive Performance Evaluation of Various Solar PV Cells at Different Atmospheric Conditions	Madhu Palati, Shaik Rafikiran, Prashanth V, CH Hussaian Basha, B. Srinivasa Varma, K. Ramakrishna Redd	BMS Institute of Technology and Management, Bengaluru-560064, IndiaSri Venkateshwara College of Engineering (Autonomous), Tirupati, AP, 517502, IndiaNitte Meenakshi Institute of Technology, Karnataka, 560064, IndiaNanasaheb Mahadik College of Engineering, Peth, India
168	IRST-2023-0501	A Variable Step Size MPFNN fed MPPT Controller for Solar PV Standalone Systems	Ramesh Kumar V, Prashanth V, Shaik. Rafikiran, K. Ramakrishna Reddy, CH Hussaian Basha, B. Srinivasa Varma	Don Bosco Institute of Technology, Karnataka, 560074, India Nitte Meenakshi Institute of Technology, Karnataka, 560064, India Sri Venkateswara College of Engineering, Tirupati, 517502, India Nanasaheb Mahadik College of Engineering, Peth, India
169	IRST-2023-0502	Control Strategy for Electric Vehicles Storage Management in Micro grids for Ancillary Support	K. Ramakrishna Reddy, Shaik. Rafikiran, CH Hussaian Basha, Prashanth V, Rani C	NITTE Meenakshi Institute of Technology, Bangalore, 560064, India Sri Venkateswara College of Engineering, Tirupati, 517502, India VIT University, Vellore, 632014, India

170	IRST-2023-0505	Injection Technique to Control Flow Separation in Hypersonic Intake	J. Sandeep, AVSS Kumara Swami Gupta, PK Dash	JNTU College of Engineering Hyderabad, Telangana, India, 500085 Sandip University, Nashik, Maharashtra, India, 422213
171	IRST-2023-0518	Prediction of Medication Drug Side Effects for Global Healthcare	Reyana A, Harigokul	Karunya Institute of Technology and Science, Coimbatore, Tamil Nadu, India
172	IRST-2023-0519	Accurate Estimation of Parameters of Interest of a Rapid Prototyped Part Using XGBoost Machine Learning Algorithms	A.M. Wankhade, D. S. Ingole	Sipna College of Engineering and Technology, Amravati (M.S.), India- 444701Prof. Ram Meghe Institute of Technology & Research, Badnera (M.S.), India-444701
173	IRST-2023-0520	Artificial Intelligence in Adulterant Detection for Public Health Concern	Reyana A, Arunkumar B, Jerlin Lijo J, Saran R.	Karunya Institute of Technology and Science, Coimbatore, Tamil Nadu, India
174	IRST-2023-0522	Assessment of Durability parameters of Quaternary Blend High Performance Concrete	Absar Yousuf Wani, Mohit Bhandari	Chandigarh University, Gharuan, Mohali (Punjab), India
175	IRST-2023-0523	Feasibility analysis of examining the effects electrifying public transportation buses in India's Delhi city	Shubham Ranjan, Vaibhav Roy, Dev Kumar Dahiya, K. Manjunath	Delhi Technological University, Bawana Road, Delhi 110042, India
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177	IRST-2023-0533	An approch to Evaluate the Accessibility and inclusion of public Space	Anuradha Kumari, Ravindra Singh, Lalit Kumar Das	Delhi Technological University, Delhi, India

178	IRST-2023-0536	Chickpea shell Biowaste-derived hard carbon as anode material for Lithium-ion batteries	Boddu Venkateswar Rao, Ravi Arukula	Anurag University, Ghatkesar, Hyderabad, Telangana 500088, India.
179	IRST-2023-0537	Comparative Study on Song Recommendation System	Rishabh Rajput, Tanya Pundhir, Sidhartha Sankar Hazarika, Konika Abid	Sharda University, Greater Noida 201310, India
180	IRST-2023-0538	SafarNaama: An Advanced Intelligent Tourist Guide	Samarpit Dua, Suraj Bhatt, Adarsh Singh, Swati Singh, Chandrahash Mishra, Vandana Sharma	ABES Engineering College Ghaziabad, India
181	IRST-2023-0539	Attendance System Using Fingerprint	Tanmeet Kaur, Ashutosh Pratap Singh, Anshul Nagar, Sumit Kumar Singh	Greater Noida Institute of Technology, Greater Noida, Uttar Pradesh, INDIA
182	IRST-2023-0540	The Effects of Various Waste Materials as Partial Replacements of Binder Material in the Production of Structural Concrete	Samreen Bano, Neha Mumtaz, Farheen Bano, Aqeel Ahmad	Integral University, Lucknow-226002 AKTU Lucknow- 226007
183	IRST-2023-0541	CustomeRise: - Marketing Enhancement using customer segmentation in Flask and K-Means workflow in Python	Modit Joshi, Yash Darra, Tarush Pandey, Vaibhav Dagula, Sankit R. Kassa	Symbiosis Institute of TechnologyPune, India

184	IRST-2023-0542	Exploring End-User Adoption of Blockchain Technology for Online Payments: An empirical Study	Sivarethina mohan R	Symbiosis Centre for management studies, Bengluru
185	IRST-2023-0543	Mathematical Model Viability for Polyethylene Terephthalate Concrete Appraisal	Ayush Meena, Engammagari Ganesh, Rakesh Choudhary, P.V. Ramana	MNIT Jaipur, India
186	IRST-2023-0544	Mechanical Hindrance Second Order Problems through Novel Approach	Engammagari Ganesh, P.V. Ramana, M.K. Shrimali	Malaviya National Institute of Technology Jaipur-302017, India
187	IRST-2023-0547	Relevance and Management of Sustainable Nature in Ancient Indian Scripters in Present Scenario	Sudhir Kumar Gaur, Deep Gupta	COER University Roorkee,
188	IRST-2023-0552	A Comprehensive System for Automatic License Plate Detection and Recognition	Khushi Gupta, Sarah Handu, and Vipin Deval	KIET Group of Institutions, Delhi NCR, Ghaziabad - 201206
189	IRST-2023-0554	Influence of Stress on Menstrual Health in Females: A Case Control Study	Ujjawal Kumar, Sujeet Kumar, Shrishti Sharma, Ghazi Abbas, Rakhi Bhardwaj, Shiva Sharma, Manisha Rastogi	Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, Uttar Pradesh-250110, India

190	IRST-2023-0555	Pulmonary functioning and body composition analysis in college going Adults	Sujeet Kumar, Ujjawal Kumar, Rohit Sharma, Siddharth Kumar Gautam, Rakhi Bhardwaj, Shiva Sharma, Manisha Rastogi	Shobhit Institute of Engineering & Technology (Deemed to-be University), Meerut, Uttar Pradesh-250110, India
191	IRST-2023-0556	Brief Overview of Different Welding Techniques with Recent Advancements	Kumari Archana, Amit Kumar, Pratibha Kumari	NIT Patna, India KIET Group of Institutions, Delhi NCR Ghaziabad, India
192	IRST-2023-0557	ON ESTIMATION OF FINITE POPULATION MEAN USING AUXILIARY INFORMATION IN PRESENCE OF MEASUREMENT ERROR	Peeyush Misra	D.A.V.(P.G.) College, Dehradun – 248001 Uttarakhand (India)
193	IRST-2023-0558	Evaluation of Antibacterial Properties of Green-synthesized Silver Nanoparticles Impregnated Tri-composite Hydrogel Derived from Natural Polymers	Sakshi Chaudhary, Bibhas K. Bhunia*, Jayanand Manjhi	School of Biotechnology and Bioinformatics, Shobhit Institute of Engineering and Technology (Deemed-to-be-University), Meerut-250110, U.P., India
194	ABST-IRST-001	A Biometrics-based Authentication Protocol for Mobile Devices	Saru Kumari	Chaudhary Charan Singh University, Meerut, 250004, U. P., India.
195	ABST-IRST-002	A lightweight protocol for user authentication and key agreement in multi-gateway based WSN	Saru Kumari	Chaudhary Charan Singh University, Meerut, 250004, U. P., India.

196	ABST-IRST-003	An improved user authentication and key agreement protocol based on the notion of the 'Internet of Things'	Saru Kumari	Chaudhary Charan Singh University, Meerut, 250004, U. P., India.
197	ABST-IRST-004	A multi-factor remote user authentication protocol	Saru Kumari	Chaudhary Charan Singh University, Meerut, 250004, U. P., India.
198	ABST-IRST-005	A quantum secure authentication protocol for satellite communication	Saru Kumari	Chaudhary Charan Singh University, Meerut, 250004, U. P., India.

Two-Dimensional AlN Physiosorbed on Nanocomposite Polycrystalline Materials: Bi2Te3 and Bi2Se3 Electronic and Optical Response-A Theoretical Study

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Abstract: Battery power is currently very expensive. The smaller the battery, the higher the cost-per-watt it becomes [1]. Though humanity depends on the battery as an important portable power source. One is left wondering how much has the battery improved during the last 10 years? Higher energy-dense batteries alone cannot be blamed for the increased runtime of modern portable electronics [2]. The ability to lower portable device power usage has come a long way. However, the need for laptop computers to process information faster and for cellular phones to transmit data more quickly offsets some of these gains. The study of batteries is moving forward steadily [3]. Compared to microelectronics, the normal annual increase in capacity is 6%. In this study, we have use computational (theoretical) chemistry and high-throughput machine learning to investigate the theoretical aspects of new heterostructures containing aluminum spinels. Further determine how 2D materials affect each classic Bismuth chalcogenides semiconducting material for sustainable energy production against potential anode/thermoelectric materials. Novel heterostructures of Bi_2Se_3-AlN Layer, Bi_2Te_3-AlN-Layer, AlN- Bi_2Se_3-AlN-Layer, AlN-Bi_2Te_3-AlN-Layer and Bi_2Se_3-AlN-Bi_2Se_3 Layer and Bi_2Te_3-AlN-Bi_2Te_3 Layer figure 1 are studied in details. A band gap of 3.740 eV for AlN and 0.343 eV for Bi_2Se_3 is reported among other electronic and optical properties. The orbital major contribution at fermi level were revealed from partial density of state for AlN and rest of the structures as well as electron transporting properties across the individual components, electron affinity and ionization energy values were lower than the composing materials. Much of the solar light absorption was attained from heterostructures indicating possible catalytic application.

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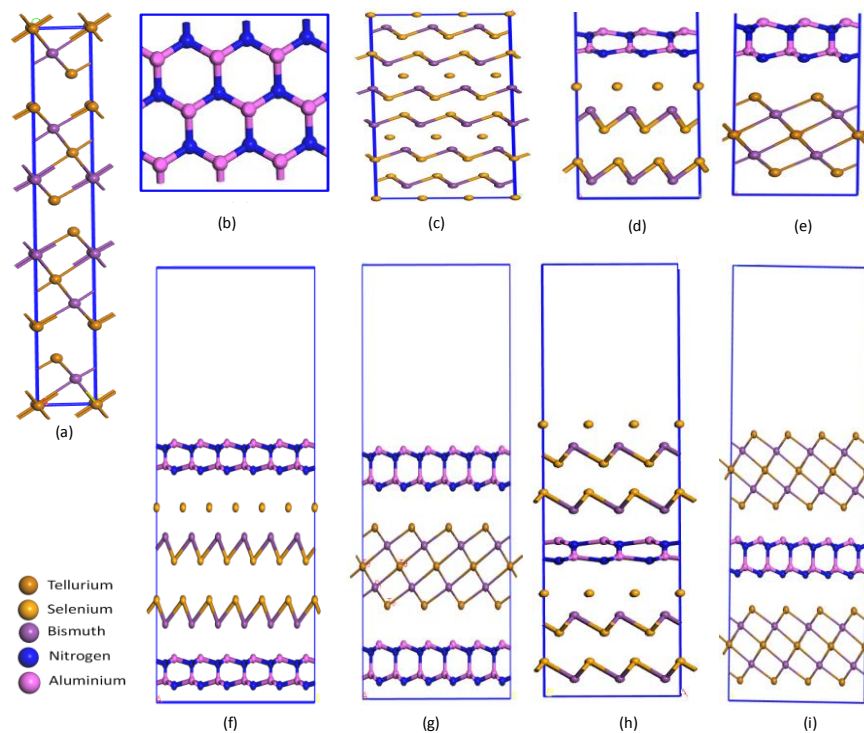
Figure 1. Bi$_2$Te$_3$ (a), AlN (b), Bi$_2$Te$_3$ (c), Bi$_2$Se$_3$-AlN Layer (d), Bi$_2$Te$_3$-AlN-Layer (e), AlN- Bi$_2$Se$_3$-AlN-Layer (f), AlN-Bi$_2$Te$_3$-AlN-Layer (g) and Bi$_2$Se$_3$-AlN-Bi$_2$Se$_3$ Layer (h) and Bi$_2$Te$_3$-AlN-Bi$_2$Te$_3$ Layer (i).

Nano biosensor for or point-of-care disease diagnostic applications

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Abstract: Nano biosensors can play an important role in the health monitoring and early diagnosis of diseases, such as cardiovascular, Alzheimer and cancers. In the conventional approach, a series of clinical diagnostic tests are recommended that are expensive, time-consuming and demand frequent hospital visits. Therefore, It is now time to develop portable and point-of-care diagnostic tool for diseases like Alzheimer, cancer by taking the success of rapid pregnancy strip tests as an example. It will not only save cost, but also save time and suffering from psychological pain that a suspected patient goes through, especially with elderly/aged patients and their care-takers.

In this talk, I will describe our work, where we developed several simple, new sensitive single/multianalyte optical and electrical/capacitive immunosensors by integrating nanoscale material on a transducing sensor

platform. These nanomaterials include quantum dots graphene sheets, carbon nanotubes and metal nanoparticles. These developed nanosensor devices proved to be advantageous in enhancing sensitivities essential for developing new generation of point-of-care device applications. The nanosensor platforms developed by our group address cost-effectiveness with sensitivity and speed that can be extended to detecting variety of other target analytes including in disease diagnosis or environmental and defense agents monitoring applications.

Impact of Swift Heavy Ion Irradiation on Physical Properties of Polymer/Polymer Nanocomposites

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Abstract: The polymer nanocomposite films were synthesized by incorporating the metal nanoparticles of nickel, copper and silver in insulating PMMA/PS polymer matrices by solution casting method. These films were irradiated with swift heavy ions at different fluences. The changes in physical properties were studied by using different characterization techniques. The optical band gap was estimated for pure polymer and nanocomposite films in the wavelength region 200-800 nm. The band gap value shifted to lower energy upon irradiation and also on doping metal nanoparticles. The differential scanning calorimetry analysis revealed the glass transition temperature (Tg) shifted to a higher temperature, which may be attributed to cross-linking of the polymer chain in PS nanocomposites whereas, in PMMA nanocomposites Tg shifted to a lower temperature due to chain scission upon ion beam irradiation, which is also corroborated by XRD analysis. The dependence of dielectric properties on frequency, fluence, and filler concentration was studied in the frequency range of 100 Hz to 10MHz. The results revealed the enhancement in dielectric properties after doping nanoparticles and also upon irradiation. These phenomena could be interpreted from the interfacial polarization of heterogeneous systems. Zero-Field-Cooled (ZFC)/Field-Cooled (FC) magnetization and magnetic hysteresis measurements were performed on nickel nanocomposites using a superconducting quantum interference device (SQUID) magnetometer from 5 K to 300 K to investigate the magnetic properties of polymer nanocomposites. The magnetic properties are enhanced upon irradiation which may be attributed to the exchange dipolar interaction of particles in the matrix and the generation of free radicals. The results will be discussed.

Data Envelopment Analysis and its application to MGNREGA scheme

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Abstract: In this talk, we will discuss about data envelopment analysis models and its application to check how efficiently MGNREGA scheme is working in India. The scheme involves a large amount of human resource and money (55,000 Cr. for financial year 2018–19). We apply the widely used technique of DEA on 29 Indian States and Union Territories to calculate the CCR, BCC and scale efficiencies. The paper also presents a ranking of the States based on SBM and SuperSBM Model. The results show that the scheme of MGNREGA stands up to the motives it was created for. Almost all States have performed exceptionally well and attained CCR (or BCC) efficiency. Except the State of Andhra Pradesh, all the States have shown optimal performance considering their size of operation. The State of Goa tops the ranking charts.

Semiconducting Nanostructured Thin Films for Gas Sensing Applications

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Abstract: The recent advances in nanomaterials open new prospects for applications of semiconducting nanostructures in different sensing devices. Semiconducting metal oxides and sulfides nanostructures are used in state-of-arts sensing applications due to their heightened electrochemical and physical properties. This talk covers the introduction of nanomaterials with different state-of-arts applications of different metal oxides and sulfides nanostructures as CuO and MoS_2. Sputtered grown Pd-capped CuO thin films were found highly sensitive and selective hydrogen gas sensing [1]. The Pd/CuO thin films have been deposited on glass substrate for different deposition time (10-30 min) using direct current (DC) magnetron sputtering technique. The Pd/CuO thin film sensor, deposited for 10 min presents a remarkable sensing performance towards the hydrogen gas (100-1000 ppm) with a fast response (10 sec) and recovery time (50 sec) at adequate temperature of 300 °C. The sensor response is found stable under the high humid (60 % RH) conditions, sustainable for long time and highly selective towards hydrogen (H_2) compared to the other gases as carbon monoxide (CO), and ammonia (NH_3). This study on Pd/CuO thin film sensor clearly provides a new route to design simple and low-cost sensor to detect low concentration of H_2 gas up to several ppm levels for use in hydrogen economy. The MoS_2 thin films were grown using reactive sputtering [2] and the sensing performance of pure MoS2 and Cu-MoS_2 thin films was studied towards nitrogen dioxide (NO2) gas concentrations (2-200 ppm) at the optimum

working temperature of 100℃. The Cu-MoS$_2$ sensor provides a high sensing response as compared to the pure MoS$_2$ thin-film sensor towards 20 ppm of NO$_2$ gas with a fast response and recovery time [3].

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Neutron induced reaction cross section measurements by direct and surrogate method

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Abstract: Measurement of neutron induced reaction cross sections have not only relevance in basic nuclear physics and nuclear-astrophysics studies but also of immense importance in fusion and fission technology applications. The result on (n,f) and (n,xp) reaction cross section measurements of unstable actinide and fusion reactor structural material target nuclei by surrogate reaction method will be presented. Possibility of extending the measurements to other reaction channels will also be discussed.

Electron Microscope- An indispensable Technique to Characterize New and of Advance Materials

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Abstract: The microstructure and phase identification of materials at nanoscale is very important to predict its properties. Electron microscopy is a powerful technique which can carry out these task with a great degree of accuracy and high resolution. It has become an important and powerful tool in science and technology. Current commercial electron microscopes use thermal or field emission from fine wire filament as their illumination source because of their lower energy spread and higher current density. The technique has been extensively useful to study microstructure at interfaces of multiplayer structures by using cross-sectional TEM. However, investigations of high technology materials require information regarding their composition in addition to microstructure and phase identification with

high spatial resolution. It can be achieved by incorporating several analytical tools such as EDS (energy dispersive spectrometer), scanning electron microscope (SEM) attachments in column of conventional TEM. Such a system is known as analytical electron microscope. By using electrons with well-defined energy loss one can generate the elemental distribution maps. This is called electron energy loss spectroscopy.

The bright field and dark field imaging in TEM is used for the detection of particle size, crystallite area, defects, grain boundaries, phase transformations. High resolution transmission electron microscopy is used for direct visualization of structures and defects. The determination of lattice parameters and crystal symmetry, crystal orientation, phase transformations (amorphous, nanocrystalline, microcrystalline, polycrystalline and single crystalline) is done using electron diffraction pattern analysis of the material in a TEM. Thus topography, morphology, composition, crystallographic information are well characterized upto sub angstrom levels using a TEM. Many industrial units and other scientific organizations also made use of this facility for different type of materials characterization and testing for quality improvement of their products. Some of the results of SEM and HRTEM are shown below.
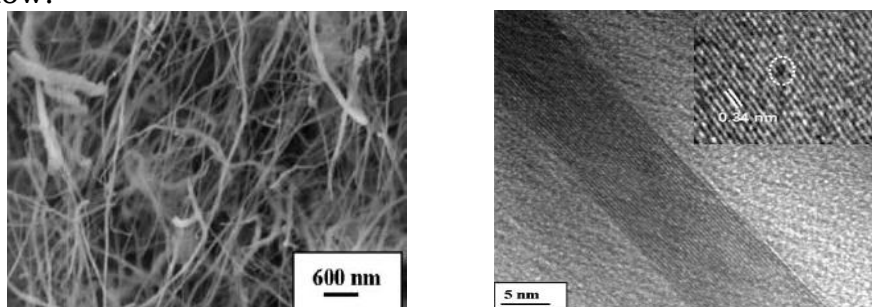
Figure 2(a)Scanning electron microscope (SEM) image of a cluster of B N Nanotubes (b)High – resolution transmission electron microscope (HR-TEM) image showing multiwalled structure of Boron Nitride Nanotubes. Inset shows an interlayer separation of 0.34 nm. A defect structure is also marked in the inset.

Emotion Artificial Intelligence (AI)

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Abstract: Artificial intelligence substantially changes the global world, influencing technologies, machines, and objects in various encouraging aspects nowadays. Emotion Artificial Intelligence refers to the development of AI systems that can recognize, interpret, and responds to human emotions. The emerging field of AI involves the use of Machine Learning Algorithms and Natural Language processing techniques to understand the human communication and facial expressions. With the increasing availability of data and advances in algorithms, emotion AI is becoming more accurate and sophisticated. As the technology becomes more advanced, emotion AI could enable

new forms of human-computer interaction that are more natural and intuitive. It could also lead to the development of new types of services and products that are tailored to the emotional needs and preferences of individual users. Emotion AI has already found applications in healthcare, customer service, education, and entertainment, among others, and its potential uses are vast. Moreover, the use of emotion AI in mental health services could revolutionize the way we diagnose and treat mental health disorders.

Intelligent control of electric vehicles for the charging and cost management of battery

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Abstract: The article analyses optimal cost management and battery control of the electric vehicle using a fuzzy logic controller. One of the biggest obstacles to electric car battery charging is the existence of continuous generating power. Electric vehicles are powered by solar PV arrays to supply the demand for constant power. The P&O method is initially used to determine the maximum power extraction (MPPT) from a solar photovoltaic (PV) array. Electric vehicles are combined with the solar PV array's outputs. The issue of preserving electricity quality is brought about by such integration. The current approaches additionally deal with the issue of large transients and longer settling times for optimal speed and torque management. An objective function has been developed for cost and battery control. Furthermore, performance parameters like rise time, and rise in temperature have been estimated using a fuzzy logic controller. It is observed that the least cost and better controlling of battery are obtained with fuzzy logic controller

Dark matter: what is it?

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Abstract: India Low threshold detectors provide a new avenue for investigating novel physics beyond the Standard Model of particle physics. Both theoretical and experimental physicists are interested in direct searches for light dark matter through its scattering with electrons. We review the current status of direct detection research. Additionally, the most plausible candidates for dark matter are axion-like particles (ALPs). We also review the development in this area.

Transverse mass (mT) Scaling of π0 and η mesons at RHIC energies

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Abstract: We present a systematic analysis of the transverse mass (m_T - m) spectra of π^0 and η mesons in $Cu + Au$ interaction ($\sqrt{s_{NN}}$ = 200 GeV) and U + U interaction ($\sqrt{s_{NN}}$ = 192 GeV). The invariant yields data of π^0 and η mesons as a function of p_T are taken from the PHENIX collaboration at the mid-rapidity region for different centrality cases. The primary object is to check the similar suppression pattern and identical spectral shapes of π^0 and η mesons at different center of mass energies in different systems. We employ m_T scaling approach to study the spectral shapes of η meson from the given pion (π^0) spectra. For this purpose, we use the modified Hagedorn function as a fit function.

Projectile Fragmentation Characteristics at Relativistic Energy

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Abstract: The projectile fragmentation study reveals the characteristics of the particles release out from the projectile spectator region. The goal of present investigation is to study the emission possibility of single event, double events and triple events for the single charge, double charge and multiple charge projectile fragments. The observation shows that the emission possibility of single, double and triple events is depending on the types of the projectile fragments.

A Survey on Plant Disease Identification Using Machine Learning

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Abstract: Plant disease identification and classification have significantly advanced thanks to the quick development of machine learning and deep learning technologies. For this analysis, we've carried out a thorough literature review on the applications of cutting-edge Machine learning and Deep learning techniques for classifying crop diseases. Our study shows that well-formed tables can be used to organize and compare various plant disease, classification models. We found that the most popular ML algorithms for plant disease categorization are Support Vector Machine, Neural Network, and K-Nearest Neighbor. The most popular DL algorithms are AlexNet, GoogleNet , and VGGNet. We also found that the accuracy of these algorithms varies depending on the dataset used. For example, GoogleNet performs well on the ImageNet dataset, but not so well on the Plant CLEF dataset. Mobile-based applications are the future of agriculture. With the help of ML/DL approaches, these applications will be able to provide farmers with information about their crops and how to improve them.

Effect of pork ingredient ratio and mix recipe on sausage quality and customer perception

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Abstract: The aim of this study is to focus on the comparison of traditional mixing recipes affecting the texture, flavor, and color of pork sausage products. The ratio of raw materials (lean pork, pork fat, pork skin) and auxiliary materials such as ice, and starch for processing were investigated. Texture and taste sensory values were investigated by 30 consumers. The results show that formula 3 is highly appreciated by consumers. The ingredient formula that is highly appreciated by consumers is 65% lean meat, 20% fatty meat, and 15% pork skin. The process of investigating the preference for sausage products by 57 consumers who have different income sources were evaluated. The results show that customers from all income streams give positive feedback on the product.

Synthesis, Characterisation and Biological Activity of Mixed Ligand Thorium Complexes with Schiff Base and 8-Hydroxyquinoline.

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Abstract: To create Thorium (IV) complexes of the Th (SB)(HQ)(NO3)2-type, a Schiff base was used as the primary ligand and an 8-hydroxyquinoline (HQ) as the secondary ligands. A new Schiff base was created via condensation of o, m, and p-chloroaniline with Salicylaldehyde. The complexes are not electrolytes, according to an analysis of their electrical conductivity in DMSO. Magnetic susceptibility experiments reveal that the chemical is diamagnetic at normal temperatures. The complex can be given an octahedral form and a coordination number of six. The thermal study of the composite shows that there are no coordinated water molecules. Little or no biological activity of the compound is seen against gram-positive strains of pathogenic bacteria and none at all against gram-negative strains.

Emission feature of the target fragments for $^{84}Kr_{36}$+Em interaction

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Abstract: The study of target destruction describes the features of the heavy ion interaction at high energy. In this analysis the features of the grey particles is studied. The possibility of release of grey particle in FHS (θ < 900), BHS (θ ≥ 900) and 4π angle with mass of the distinct target groups of NED is reported. From this study it is found that average multiplicity of grey particle is increasing from light to heavy target nuclei.

Assessment of Seed-Borne Fungi of Sunflower (Helianthus Annuus L.) and their Application in Synthesis of Zinc Oxide Nanoparticles

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Abstract: Three seed health testing (SHT) methods employed was found efficient in the detection of Gram seed mycoflora, in their order of merit as blotter paper method, agar plate and seed washes methods. Among these three seed health methods, the agar plate is most superior for the isolation of fungi viz. *Aspergillusflavus, Aspergillusniger, Fusariummoniliforme, Alternariaalternata, Macrophominaphaseolina, Drechsleralongirosrata, Sclerotiumrolfsii, Aspergillusfumigatus, Cladosporiumherbarum Penicilliumcitrinum, Curvularialunata, Rhizopusarrhizus* and *Botrytis cinerea, Rhizoctoniasolani* and *Mucormucedo*. All of these fungi were found pathogenic to sunflowers and also found to affect, seed rot, seed germination, leaf spot, rust and wilt vigor index of sunflowers. The identified fungi used for the synthesis of the nanoparticles.

Preparing Materials for Societal Applications from Pulp and Paper Mill Black Liquor

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Abstract: Paper being an essential commodity required worldwide is produced in copious amounts every year in pulp and paper industries. An estimated per capita consumption of paper is around 55 kg worldwide. Production of paper leads to generation of black liquor to the tune of 170 million tonnes per year. The black liquor is generally considered as spent liquor generated during pulping of lignocellulosic raw material for paper making. This black liquor contains many valuable organic and inorganic substances such as lignin, hemicellulose, silica, and lignosulphonates. The presence of these substances in black liquor makes it suitable for production of various value-added products for societal applications. Compounds such as fertilizers, fuels, cement, adhesives, binders and other additives etc. can

be obtained by black liquor and its derivatives via chemical, physical and biological routes. Nevertheless, the processing of black liquor in chemical recovery operations of pulp and paper mills also generates compounds such as dregs, grits, lime mud, etc. These compounds can also be utilized for production of various value-added products such as building materials, fertilizers and many others. Hence, this paper aims to present an overview of different materials produced from pulping black liquor for numerous materials useful for human beings.

Multiplicity Characteristics of the Target Fragments and Shower Particles at Relativistic Energy

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Abstract: To study the hadron-nucleus and nucleus-nucleus interactions reaction mechanism is an important parameter. To understand the reaction mechanism, we must have to understand the interaction geometry of the interacting nuclei. In this study we have used new parameter Q to distinguish the different type of interaction. The results observed in this study are compared with available measurements by other experimental groups and found consistent.

Automated Notarization System using Blockchain: A Systematic Literature Review on Existing Methodologies

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Abstract: In recent decades, obtaining government services from the designated government offices has proven to be a difficult task. The outrageous level of corruption occurring in these government offices is openly visible, and processes are purposefully delayed so that people can pay a hefty bribe to obtain these services. The government's notarial services are one of these primary services which is heavily impacted from the aforementioned factors. The main causes of this type of poor service are human intervention and the government's inability to keep an eye on things. Therefore, a system that is effective, reliable, quick, secure, and automated is needed to handle the problem. This review article will examine various notarization solutions that are currently in use.

Neutrino Physics with Reactor and Accelerator Experiments

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Abstract: Neutrino is arises as a problem in the β decay with the Pauli's hypothesis in 1932. From that time as active problem in nuclear physics. It's now a point of study in various field of physics like beyond standard model of particle physics, cosmology and other. Here in this article we will look at the various aspects of neutrino properties which have studied under the accelerator and reactor based produced neutrino. Also we will look at the present reach of different important parameter in neutrino sector like mass mixing angle, effective Majorana mass limit, and many others.

Multiplicity Characteristics of the Target Fragments at Relativistic Energy

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Abstract: The studies of nucleus and hadron nucleus collisions it is extensively important to understand the reaction mechanism. For understanding the reaction mechanism firstly, we must have to understand the collision geometry of two interacting nuclei. Based on impact parameter we can easily divide the collision geometry in three different categories known as peripheral, quasicentral and central collision. In the present case new parameter Q have used in place of old parameter (to distinguish the different type of collision geometry. After separation of collision geometry using new parameter, we have studied the multiplicities correlation of target fragments. The results are also compared with available measurements by other experimental groups and found consistent.

Identification of Charged Kaons in PHENIX Detector at RHIC

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Abstract: In the present paper we discuss the importance of RHIC which is primarily designed for the production and detection of Quark Gluon Plasma (QGP). The QGP, an elusive form of matter, which was created at the time of Big-bang.We overview the detection of charged kaons by the PHENIX detector at RHIC. Here we briefly discuss about the various detectors with their functions but main focus is given on the TOF detector which is primarily designed for charged particle identification.

Emission characteristics of the events emitted in forward-backward hemisphere in the interaction of $^{84}Kr_{36}$ + Em 1 A GeV

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Abstract: We study as a result of different nuclear emulsion target interactions, the forward multiplicity initial of a black particle and grey particle released from $^{84}Kr_{36}$(1 GeV per nucleons) induced different types of nuclear emulsion target interactions are evaluated. The averaged multiplicity of grey particle in forward-backward and forward averaged multiplicity of black particle is observed to rise as the target size increases. The emission feature of a forward black particle, and backward grey particle is unaffected by projectile mass and energy, but when the mass and energy of projectile increases the averaged multiplicity also increases of forward grey particle. We have compared our result with other experimental observation and found the consistency.

Computational Analysis of Pulsating Pipe Flow for Heat & Flow Characteristics Enhancement

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Abstract: To increase the performance of the thermal and flow devices with respect to the heat and flow characteristics in a pipe, different techniques are widely used such as modification in the fluid flow and modifications in the pipe geometries. Several boosting modified tubes, including a finned tube, a

tube with ribs, a tube with spirally roughened walls, a corrugated tube, a fluted tube, a helical tube, an elliptical axis tube, and others, act to increase the turbulence in fluid flow and are the examples of modifications in the geometries. On the other hand, surface vibration, fluid vibration, fluid pulsation, electrostatic fields, fluid injection or suction, and jet impingement are examples of modification in the fluid flow itself. As compared to the modification in the pipe geometries with modification in the fluid flow, the fluid flow modifications attract more cost and most are the techniques are not so economical. In the current paper, the comparative analysis is studied between the simple pipe and pipe with dimples for heat and flow characteristics enhancements with the help of computational techniques. For pipe with dimples, the results were more satisfying as compared with the simple pipe. The maximum velocity build-up in the dimple pipe was 0.753m/s whereas in the simple pipe it was 0.604m/s. Also, vorticity was found to be more in the dimple pipe and which was 126000/s as compared with simple pipe 389/s. Heat transfer enhancement in the dimple pipe was observed in terms of an increase in the temperature and found to be a maximum of 418 K as compared with simple pipe only 409 K. But on the other hand, the pressure drop was observed to be more in the simple pipe as compared with dimple pipe. The computational study concludes that there were enhancements in the heat and flow characteristics of fluid flow in the dimple pipe as compared with the simple pipe.

Impact of Gamma Radiation on Concrete Developed with Fibers

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Abstract: Utilizing gamma radiation as an enhancement tool for the improvement of strength in various types of concrete is one of the trending technologies across the globe, but it has made only narrow inputs into the concrete sector due to a lack of evidence of its adeptness. The present paper objectifies a brief review of the past and present research and subsequent outcomes in this area. This paper's main focus is built on man-made fibers which include synthetic (polyester, nylon, and rubber) and Inorganic (Glass and Carbon) fibers. This review comprises radiation dose, the intensity of dose per hour, fiber concentration percentage, various types of synthetic and polymer fibers that have been used to develop polymer composites and fiber reinforced concretes along with strength parameters. In doing so, this review neither only highlights the achievements of the radiation process to modify the surface structure of concrete up to the present, but more precisely, the focus area is in which acquaintance is static, deficient, and further strenuous research would be advantageous.

A Review on Natural and Synthetic Polymers Used in the Preparation of Nanofibrous Scaffolds for Faster Wound Healing

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Abstract: Nanofiber scaffolding closely resembles the tangled structure of naturally occurring extracellular templates, which support the development of tissue by offering a natural environment. Because they have a higher surface-to-volume ratio than other types of scaffolds, nanofibrous scaffolds encourage better cellular adhesion and enhance mechanical properties. The mesh-like structure of nanofibrous scaffold may act as a carrier of skin cells as well as can provide prevention against the penetration of microbes. This can also help to maintain the required moisture for the healing of wounds. These nanofibrous meshes can be developed by using several fabricated and naturally occurring polymers. Synthetic polymers are commonly utilized in amalgamation with several other polymers of biological origin (chemically proteins or polysaccharides that help in improving cell colonization and appearance). These meshes can also be incorporated with various therapeutic agents such as vitamins, growth factors, antioxidants, hormones, anticancer and antimicrobial agents, etc. The present study is focused on various fabricated /or natural polymers used in the manufacturing of nanofibrous scaffolds for the promotion of wound healing and some important advances that have been made in this field recently.

Advantages Of Implosion Technique in Water Treatment as Compared to Different Treatment Methods

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Abstract: Quality of water is the major concern among all humans. Most of the available water can't be used directly. There are some techniques which are commonly used for treat water for its best use. These techniques involve filtration, ultra-filtration, reverse osmosis, UV treatment, chemical treatments etc. All these techniques for water treatment are used singly or in combined form. All these techniques have some advantages and some disadvantages. We have to make effort by treatment through various for making the water

potable. Reverse Osmosis is the major technique used for water treatment along with filtration and UV treatment. One more technique which in not used in general practice but can be very useful is Implosion technology. Filtration is the technique which only removes suspended particles; it does not work on dissolved solids. For bacterial contamination UV treatment is effective. Reverse Osmosis effectively removes the dissolved solids and minerals; this may cause harmful impact for the human body on regular intake. The study shows that reverse osmosis decreases dissolved solids from 60 to 95 %, a sharp decline in pH of water is also observed after reverse osmosis which is not suitable for human body on regular basis. Implosion technique is only technique which does not impact negatively on human body and also sustainable technique. It makes positive on the chemistry of water as it removes turbidity from water (20 to 80%), make appearance and taste better, increases the level of dissolved oxygen (5 to 20%), removes hardness to little extent (10 to 30%), and also helps to removes bacterial contamination in some cases. Implosion technique maintains the mineral content in water. Hence it is concluded that for the water which have acceptable dissolved solids (150mg/l to 600 mg/l) implosion technique is best for use, Reverse osmosis is best to use when dissolved solids in water are much higher (>600mg/l). These all techniques may be used in combination of two or more for obtaining desired water quality.

Application of Metal Oxide Nanoparticles over Conventional Therapeutic Interventions: A Comparative Review.

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Abstract: The emergence of antimicrobial resistance among humans and animals has put our life in grave trepidation. Conventional treatment strategies have failed humanity due to their exhaustive usage. The overuse of several novel methods to prevent or cure diseases caused by multi-drug resistance bacteria has not been effective lately against pathogenic infections. Various ways have been explored to overcome antibiotic abuse in the past decades. Organic and inorganic materials have shown possibilities of an excellent antimicrobial. Inorganic metal oxide nanoparticles have been intensively and exhaustively studied as an alternative therapy in precedent decades. Zinc oxide (ZnO) and titanium dioxide (TiO2) nanoparticles have received considerable interest due to their exclusive antibacterial, antifungal properties, U.V. filtering, high catalytic and photochemical properties. Also, nanoantibiotics provide an increased surfaceto- volume ratio due to their petite size, allowing high reactivity. The current review focuses on the emergence of nanomaterial as an effective alternative antimicrobial treatment in the pharmaceutical industry. The localized drug delivery and bioavailability are few significant advantages of zinc oxide anf titanium dioxide nanoparticles. The medical implementations and significance of ZnO and TiO2 nanoparticles against bacterial pathogens causing various severe diseases to the human race is discussed. A comparative approach is adopted

regarding the advantages and usage of new-age nanoparticles to treat infections caused by pathogenic bacteria, in contrast with the conventional antimicrobial methods or therapeutic interventions used for the past few decades.

Value-added utilization of fly ash waste from industries: A step towards sustainability

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Abstract: Fly ash (FA) could be hazardous and may harm humans' health and the environment if would not be appropriately managed. Upcycling of FA from various thermal power plants is still in a nascent phase. A considerable increment of 20% to 80% was found to be in the utilization of FA for the last two decades (2000-2020). The current project deals with the vigorous use of class F FA for various construction and industrial applications. A brick made of more than 40 wt.% of FA and a blend of single-use plastics could be the right approach towards society's waste management and FA problem. Prior to reinforcement, a suitable eco-friendly acidic coating/treatment of the FA may neutralize or inactivate heavy metals and increase the interfacial adhesion with the optimized blend. Another potential application of the FA could replace the micro/nanofillers in the polymer industry. Suitable treatment and uniform particle size reduction to the micro/nano-level of the FA make them an ideal candidate for hybridizing short fiber reinforced polymer composites. Additionally, construction materials and items such as bricks could be prepared through the use of treated ash/fly ash, blends of waste polyethylene terephthalate (PET), polypropylene (PP) and polyethylene (PE), toughening agent such as crumb rubber from scraps and selective compatibilizers to collectively tackle the problem of waste plastic management and ash/fly ash from thermal power plants and other industrial sources

An Early-stage Diabetes Diagnostic Based on Unsupervised and Supervised Machine Learning Methods – A Review

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Abstract: Diabetes Mellitus, is a widespread endocrine illness that affects the entire world today. This is a necessity for an effective model that can predict diabetes and its variants with greater accuracy as early as possible. For increasing the accurateness of prediction with best effectiveness innovative ML Model is proposed. This survey aims to learn about and analyze the operation and performance of different Machine Learning techniques. This survey examines the possible applications of machine learning in the healthcare field. It works with new technologies such as social media platforms for predicting human predilections; in the field of medicine for

predicting disease and so on. There are many techniques in data mining each model with its own level of accuracy. However, there is no model which can be said to be flawless as the performance of a model depends greatly on the datasets used. Here in these studies some of the classification algorithms have been deeply discussed. The main aim of this study is to deeply understand and analyze the working of some of the ML algorithms.

Experimental investigation and optimization of turning process parameters of AISI 5130 hardened alloy steel

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Abstract: Lesser electricity consumption during hardened alloy steel machining could even substantially enhance the environmental efficiency of manufacturing systems. This necessitates the computation of energy usage in the computerized numerical controlled (CNC) lathe machine. The present work has a pilot study of turning on AISI 5130 grade hardening alloy steel. Research analysis were performed on CNC lathe machine and the impact of turning process parameters were deliberated using Taguchi loss function optimization and analysis of variance (ANOVA). Taguchi loss function optimization and ANOVA main effects plots obtained via nine set of turning operation were performed designed on Taguchi L9 orthogonal array whose optimum level intended for Material Removal Rate (MRR), Surface roughness (SR) and Flank wear were chosen from response of nine set of turning operation design. The results show that the input parameters of machine are the dominant factor affecting all three response parameters. If connections among control factors are almost certain or not well intrinsic, should choose design that also can anticipate connections. MINITAB can facilitate in the selection of a Taguchi design which does not confound the interfaces of significance with one another or that of main effects. The optimal combination of variables have been identified based on alloy steel desirability value, and major contribution of variables is calculated by analysis of variance. Taguchi quality loss functions optimize the turning factor for numerous responses i.e. material removal rate, surface roughness and flank wear. The optimal turning parameter were obtained for optimum condition is cutting speed 180 m/min, feed 0.10 rev/min. and dept. of cut 6 mm.

Identifying and Understanding Resource Utilization with Load Balancing in Cloud Environment

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Abstract: The cloud computing platform has evolved so much with time that today; it is the pioneer for computations. Cloud computing environment provides ultimate results when the resources at its end are utilized to the maximum. Among all the resources, physical machines (PM) in the Data Centers (DC) play a prominent role in providing these ultimate results. To manage these PMs, scheduling algorithms are implemented at the cloud's end. Hence, scheduling algorithms must be visited and studied to enhance the cloud results. This research study identifies and understands resource utilization with respect to the load balancing process by computing tasks using multiple PMs in a simulated cloud computing platform. The algorithms of scheduling considered for this study are ZHCJ – ON and ZHJZ – ON. The performance parameters considered for this study are broadly categorized as the unbalancedness of DC and PM, the average utilization percent of DC, and the availability factors of DC. Experimental results convey that the ZHCJ – ON scheduling algorithm performs superior than ZHJZ – ON in terms of unbalancedness performance parameters of DC and PM, average bandwidth usage, and overall utilization percentage in DC. On the other hand, ZHJZ – ON algorithm performs superior than ZHCJ – ON in terms of average CPU and RAM utilization percentage in the DC. An empirical analysis is also performed to support and provide an additional extensive comparison among these algorithms. In the end, Reinforcement Learning is suggested to provide a hybrid scheduling algorithm combining the positives of ZHCJ – ON and ZHJZ – ON to enhance the cloud computing platform and provide Quality of Service (QoS).

An Insight on Feature Extraction Techniques for Image Processing

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Abstract: Clothing dimension extraction is a crucial aspect in the fashion and apparel design industry, as accurate measurement is essential to create a garment that fits the human body comfortably. This review article aims to provide a comprehensive overview of the various techniques used for garment dimension extraction and compare their strengths and weaknesses based on various parameters. In this article, we will discuss the various approaches used to extract clothing dimensions, including image processing, machine learning, deep learning, computer vision, and 3D scanning. Each technique will be analyzed based on its accuracy, speed, complexity, flexibility, cost, and data requirements. In addition, recent advances in the field will be highlighted

and opportunities for future research will be discussed. This review document provides valuable information for researchers, practitioners and students in the field of fashion and apparel design. It helps advance our understanding of garment dimension extraction and provides a comprehensive comparison of the different techniques used for this purpose. Overall, this overview document serves as a comprehensive reference for those interested in clothing dimension extraction and provides a comprehensive understanding of the various techniques used in the field.

Applications and Emerging Technologies for CVT: Review

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Abstract: This paper reviews a number of deep learning methods that have been applied in a number of computer vision tasks. We are surrounded by pictures; smart phones have cameras, making it easier than ever to take photos or videos and share them. We require a computer that can "see" an image and comprehend its information in order to make the most of image data. The challenge of teaching computers to "see" was the focus of computer vision tasks (CVT). Computer vision is a multidisciplinary area that, in general, might be referred to as a branch of artificial intelligence and machine learning. It may make use of both specialised techniques and generic learning algorithms. It is composed of numerous hidden layers of artificial neural networks. This study seeks to provide an examination of computer vision tasks to develop techniques using deep learning methods, emphasizing the accomplishments and difficulties. It begins with an introduction of several different deep learning techniques and notable advances, and then then gives a brief explanation of how they are used in a number of visual tasks, including gesture, face, and object identification. This paper deals with the overview of future deep learning advancements scheme design applications involving computer vision is provided at the end.

Arduino Uno Based Child Tracking System Using GPS and GSM

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Abstract: Wearable tracking gadget that school-age children can wear is the topic of this paper. It doesn't need any pricy technology to operate. This technology is usable by persons of all educational levels. It has got two buttons one is alert button and another is panic button The major objective of this gadget is to ensure that the youngster may contact their parents in an emergency. The alert button allows the child to notify their parents of an

emergency and provide their current location. For communication, the current technology includes Bluetooth, WI-FI, and RFID. It is hard to communicate across a great distance with these technologies because they only have a narrow range of coverage. Also, they are not that accurate. This device solves the issue by utilizing GSM technology. Parents do not need to submit any special code to the device to determine the child's location's latitude and longitude. If a child is in any emergency situation and wants his/her parents to know their current exact location. If a child feels uneasy, there are two methods to let the parents know. The cell phone of the parents or guardian receives the alarm message via SMS by pressing alert button and if the child wants to communicate to parents immediately, a call can also be made via this device using the panic button and the child can talk to the parent in real time.

Hybrid-Optimization of CNC Milling Process parameters using Particle Swarm Optimization (PSO) and Cuckoo Search Optimization (CSO)

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Abstract: Computer numerical control (CNC) is one of the best advanced computational techniques in the field of advanced manufacturing technology for better accuracy and precision. Linear Neural Network is utilized to construct a linear model from collected data for the study. helix angle (HA), radial depth of cut (RD), axial depth of cut (AD), and cutting speed in this study (CS) are taken as important process variables which are the function of performance measures viz. tool wear rate (TWR), material removal rate (MRR) and surface roughness (Ra). Two traditional metaheuristic optimization algorithms, Particle Swarm Optimization (PSO) and Cuckoo Search Optimization (CSO), as well as their hybrid algorithms are used. The collected data were investigated in this paper to find out best optimal results of improving the productivity of the CNC milling process. The HPSOCSO approach is employed to get the ideal process parameters for CNC milling of cast iron. The developed neural network (NN) model is combined with PSO, CSO, and HPSOCSO for this aim to reach the better conclusion.

Experimental Investigation on Mechanical & Physical Properties of Waste High-Density Polyethylene Reinforced with Waste Glass Powder

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Abstract: In most pipe industries of Ethiopia, the scraps of the original pipes are simply collected and are being taken as wasted materials. Specially, in industries of HDPE (High-Density Polyethylene), it is observed that the scraps are mostly used for the protection of farming areas inside the companies. But further technological activates were not applied in recycling and reusing of such wastes. HDPE by nature is a type of flexible and easily recyclable plastic material which can be mostly used for production of pipes. Also, in most glass industries and easily crushable bottle glass users of the country, wastes and any cracked & crashed glasses are seen being dumped around road sides and garbage areas. Therefore, in this study, it is aimed and practiced that the waste HDPE's scrap are experimentally processed and then mixed with the waste powder glass and then a new composite material which is composed of waste HDPE matrix and glass powder reinforcement is produced. The experimental results obtained reflect recyclability of the wastes and capability of becoming best matrix as well as reinforcement material. For the experimental work, six samples having 0 %, 2%, 4%, 6%, 8% and 10% of the reinforcement and 90% of the matrix (84.56% waste HDPE + 5.44% Additives/Dutrex oil), 92% of matrix (86.56% waste HDPE + 5.44% Additives/Dutrex oil), 94% of matrix (88.56% waste HDPE + 5.44% Additives/Dutrex oil), 96% of matrix (90.56% waste HDPE + 5.44% Additives/Dutrex oil), 98% of matrix (92.56% waste HDPE + 5.44% Additives/Dutrex oil) and 100% of matrix (94.56% waste HDPE + 5.44% Additives/Dutrex oil) were used. In order to obtain the required composite product, the composite raw was heated and pressed to form the required samples. As per the composite standards, mechanical properties of the samples such as hardness, tensile strength, tear strength, modulus, elongation and surface abrasion resistance were measured. And the main composite physical properties such as water absorption test, density, relative density and maximum heat resistance capability were measured. And also, theoretical density of samples was determined by using rule of mixture. After all experiments are conducted a composite sample having 27.645 MPa of tensile strength, 22.061 MPa of tear strength, increasing in hardness (54.37 to 58.93 shore A), average actual density of density of 1.1195 g/cm3, average theoretical density of 1.001 g/cm3 and with increasing abrasion resistance capability were selected.

Comparative Study on Zinc and Tin Oxide Nanoparticles Fabricated by Low-Cost Hydrothermal Synthesis

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Abstract: In this present study, Zinc oxide (ZnO) and Tin oxide (SnO2) are synthesized by hydrothermal technique, and their physical and chemical possessions were considered. X-ray diffraction (XRD) data of Zinc oxide shows the diffraction peaks observed are hexagonal ZnO, calculated from Rietveld refinement and Xpert Highscore, space group- P63mc with space group no. 186, the volume of cell- 47.61×106pm3 and crystallite size were found 37.7 nm. XRD data of Tin oxide shows the diffraction peaks observed are tetragonal SnO2, calculated from Rietveld refinement, space group- P42/ncm with space group no. 138, the volume of cell-70.62×106pm3 and crystallite size were found 21.32 nm of the highest peak. The crystallite dimensions were resolute by Scherrer's formula and modified by Scherrer's method. The surface morphologies of synthesized nanomaterials are investigated using a field emission scanning electron microscope (FE-SEM). Fourier-transform infrared spectroscopy (FT-IR) results confirm the chemical bonding of Zinc with oxygen and Tin with oxygen. FTIR also use for material composition, Further UV Visible spectroscopy is rummage-sale to study the visual and electrical properties of ZnO and SnO2 material. And lastly, AFM was performed to understand the morphology. The information for rutile SnO2 proposes that its exteriors host intensely trapped electrons at large concentrations, allowing decent sensitivities and, more remarkably, a comparatively unsaturated retort at large absorption. This comparative study compared Zinc oxide and Tin oxide and concluded their morphology and structural difference with the dependency on characterization results.

Machine Learning-Based Predictive Analysis of Metabolic Features for Polycystic Ovary Syndrome

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Abstract: This study explores the use of machine learning algorithms to detect Polycystic Ovary Syndrome (PCOS) based on metabolic features. PCOS is a chronic condition characterized by endocrine and metabolic imbalances that mostly affect women and is caused by ovarian dysfunction. The disorder affects multiple hormones, and it is estimated that 9 out of 10 women in India are affected by it. Ovary dysfunction is diagnosed using ultrasound imaging. This paper evaluates the effectiveness of different machine learning algorithms for predicting PCOS. Machine learning algorithms have been applied to analyze information automatically, providing a promising approach

for early detection of PCOS. The study investigates the accuracy of different machine learning algorithms, including Support Vector Machines (SVM), Random Forest, and hybrid models. The results of the study indicate that hybrid models exhibit higher accuracy (0.87) compared to SVM and Random Forest models. The hybrid models combine different machine learning algorithms, resulting in higher performance. Overall, the study suggests that machine learning algorithms can be used as a reliable tool for detecting PCOS based on metabolic features. The study highlights the importance of using advanced technologies to improve healthcare outcomes and emphasizes the potential of machine learning algorithms in healthcare settings.

Prediction of Surface Roughness of the Monel K-500 Using Stationary Wavelet Transform Method

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Abstract: In industry, surface roughness is usually assessed with a stylus. The stylus tip diameter filters deep valleys, which is a limitation of stylus-based surface roughness evaluation. It's also an extremely time-consuming and offline strategy. Because of the advancement of powerful cameras and enhanced image processing algorithms, a vision-based system for surface roughness valuation has the potential to emerge as a credible online surface roughness measuring system. This research aims to develop a method for evaluating surface roughness utilizing vision-based image processing. The Stationary Wavelet Transform calculates the surface roughness of the turned surface of Monel K 500 Superalloy (SWT). Originally, a series of SEM images of twisted characters were created, and the surface roughness value was determined in MATLAB using the input image's mean surface quality. Using the mean and standard deviation statistical parameters, The surface roughness was determined consuming the pixel intensity of the turned surface photos. It was discovered that the mean was more closely connected to surface roughness levels. As a result, the approach may be preferred to characterize twisted characters online.

A Comparative Study of different Techniques to predict Maternal Morbidity and Mortality Model

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Abstract: Artificial intelligence techniques vary from machine learning to deep learning are frequently used in healthcare sector for disease diagnosis and drug discovery. Numerous medical data sources are required to perfectly diagnose diseases using artificial intelligence techniques, such as ultrasound, magnetic resonance imaging (MRI), mammography, genomics, computed

tomography scan (CT Scan), etc. This article covers the extensive study on artificial intelligence and machine learning techniques to diagnose women's related health issues occur during pregnancy or after pregnancy. Based on the study of different articles on maternal morbidity and mortality, the results are also compared using various quality parameters such as prediction rate, accuracy, sensitivity and specificity.

Nonlinear stability analysis of Rayleigh – Bénard convection in a micropolar fluid with heat source/sink

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Abstract: This article investigates the impact of heat generation on convective instability in a micropolar fluid layer that undergoes bottom heating. By conducting a weak non-linear stability study using Lorenz equations, the Nusselt number formulation was obtained to solve the problem mathematically. The study examined various factors, such as internal Rayleigh and Prandtl numbers, in heat transfer. The findings revealed that micropolar fluid and internal heating play a significant role in regulating heat and mass transmission and controlling the onset of convection. This research provides valuable insights into the mechanisms of convective instability in micropolar fluid systems, which can help in the development of efficient heat transfer technologies for various engineering applications.

Scalability-Aware Hybrid Workflow Scheduling Algorithm for Cloud

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Abstract: Scientific workflows are a method for scientists to manage large, complex scientific applications used in fields such as astronomy and gravitational waves. By breaking down the scientific process into smaller, interdependent tasks, workflows help optimize the use of resources and manage complexity more efficiently. Cloud computing is popular in deploying such scientific workflow due to its cost-effectiveness and less execution time. Workflow scheduling in cloud computing is an NPHard problem and has a prominent issue in cloud computing. Finding a polynomial-time solution for workflow scheduling is not possible for traditional algorithms. The scalability of the new hybrid algorithm, named PSO-GWO, is evaluated in this paper.

The experimental results show that PSO-GWO is better in almost all the cases compared to standard PSO and GWO in terms of total execution time and total execution cost.

MAC Randomization Detection and Impact on IoT Devices

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Abstract: In order to safeguard user privacy and prevent device (and user) tracking, an increasing number of operating systems have included WiFi MAC address randomization. Mobile devices so employ a variety of virtual addresses throughout time as opposed to a single fixed factory address that may be used to identify a specific user. Because of this, it is hard to even extract anonymous information about a person's mobility from WiFi traffic traces, which would be useful for a number of reasons (e.g., counting the number of people in a mass transport vehicle). Since every created request includes information specific to the device, including addresses and credentials. So, in order to boost security, vendors could incorporate MAC randomization techniques into this. The technology known as Mac randomization boost end-user privacy, Wifi or Bluetooth are used to link the majority of IoT devices to one another.

Mac Randomization technique is already been successfully implemented in Android and IOS phones. So, here identification of randomized MAC with the help of packet sniffer will be done. In this paper demonstration of how a passive attack known as the MAC Spoofing attack was previously possible will be explained. Further security of IoT the devices is also checked by analyzing the PCAP file and found that the packets or probe request interchanged between different IoT devices also contains information that need to be secured.

5G Enabled portable water monitoring analyzer for real-time Quality Analysis

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Abstract: Economic growth is highly dependent on natural resources out of which the availability of water and its quality plays a major role and is influenced by the combined effects of climate change, basin-level water resources, global geopolitics, government policies and management. Deteriorating water quality can worsen health conditions, reduce food production and deteriorate soil conditions and therefore affect farmers in the agriculture sector, fisheries, and all industries dependent on good quality water. It can aggravate poverty and economic downfall in many countries. Due

to the scarcity of adequate water monitoring stations, it is difficult to analyze the key areas with low Water Quality Index (WQI). This research paper aims to address the problem of monitoring water quality in all the districts of Maharashtra in India and introduces the design and implementation of a portable water monitoring device with 5G connectivity that will provide real-time data of the physio-chemical parameters of water samples of a certain area. Apart from physio-chemical parameters, there are other indirect parameters that affect the water quality like biological, environmental, and societal effects that can be taken through the 5G cloud from their respective research bodies to calculate the WQI of water samples and identify areas that require immediate attention. It will improve public awareness about the importance of clean water and the role it plays in the ecosystem, growth and development of an area.

Development of Thermodynamic Model to predict the Thermodynamic parameters of SI Engine

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Abstract: To Predict the thermodynamic performance parameters SI engine two zone thermodynamic simulation model was developed. The Engine performance and thermodynamic parameters was predicted using first order mathematical ordinary differential equations such as peak pressure, burned gas temperature, unburned gas temperature, heat transfer, heat leakage, heat flux and Adiabatic flame temperature. The Fuel is specified by the way of C-H-O-N Values, the equilibrium state of combustion products was determined by olikara and borman method. The model was developed for Air cooled, single cylinder, 4 stroke SI Engine with variable compression ratio of 6-8. Curve fit Co-efficient are used to simulate air and fuel data along with residuals. Thermodynamic parameters are plotted with respect to crank angle. The objective of this work was to study the thermodynamic, performance parameters of SI Engine using various mathematical model.

Fluorescent Chemo-sensor detection of Picric Acid (Nitro-Aromatic Compound)

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Abstract: The compounds that have the highest and most valuable group of chemicals which we use in industries at present time are called nitroaromatic compounds. These are those compounds that contain organic molecules, and more importantly, they involve at least one nitro group in the ring. As we know Picric Acid is a compound that has properties of organic compounds and with the $(O2N)3C6H2OH$ and 2, 4, 6-trinitrophenol (TNP) is the IUPAC name of picric acid. In this paper, I will explain the detection of picric acid by a fluorescent chemosensor. At present, as we already know that chemistry is well known for the utilization of various fluorescent techniques. It helps in synthesizing fluorescent Nanoscopic objects or compounds. The nature of the lost properties of the fluorescent chemosensor is highly responsible for the research of picric acid. There are so many sensors that we can use for the detection of picric acid but basically, the fluorescent chemosensor is the best among all from the point of nature.

This sensor has a 516nm superb fluorescence intensity for profiling anything. The fluorescence sensor possesses high sensitivity toward picric acid. This sensor on a priority basis made for the research work on picric acid. As we ready know that research on the nitroaromatic compound is one of the main research topics in the chemistry field. Because nitroaromatics are so explosive all want to know the main reason for their explosives. That's why it is an important topic in the research field of chemistry. And picric acid is one of the main nitroaromatic compounds which we have to study in this paper.

Rejuvenation of Water Bodies by Cownomics Treatment: A Critical Study in India

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Abstract: Water is considered to be the life of world and the global civilization cannot be thought of sustaining without the dependency on water. But such a valuable and indispensable resource has been made to waste and unusable due to various reasons both man-made and natural. This has led to a deadly scenario known as water crisis which has been becoming serious to severe globally including India. Many traditional methods are available for water rejuvenation purpose, but none of them till now has been considered as a sustainable and eco-friendly solution. In contrast to these, Cownomics considered to be the only in-situ water treatment process which has started

changing the way people used to see these technologies. Having produced encouraging results in various water rejuvenation processes in lakes and rivers across India, it has been applied in rejuvenating four heritage ponds in Puri, a coastal district in Odisha (an Eastern state in India). The current study examines the impact it has created in the psychology of users (both tourists and local residents). The results carrying the factors of effectiveness can be useful for policymakers and stakeholders at large in the years to come.

Analysis and Design of Post-Tensioned Flat Slab considering long term Deflection using CSI Safe Software

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Abstract: Flat slabs are slabs that rest directly over the column without the use of beams. Columns may be provided with or without column heads, and slabs may be provided with or without drops. The use of flat slabs in multistory buildings is common nowadays because of the greater height of the stories available. Also, the total height of the building is reduced, which is an advantage over the normal slab. If the flat slab is prestressed, then the section of the slab can be decreased further and cracking is reduced. By prestressing, we can use the flat slabs for much larger spans with deflection within the permissible limits. Nowadays, prestressing is commonly used in construction. Pre-tensioning or post-tensioning are two ways to perform prestressing. In this study, analysis and design of the post-tensioned flat slab were performed in the CSI Safe software. A flat slab is considered to have drops and deflection due to the long-term effects of creep and shrinkage that have been taken into consideration. After the analysis results are collected in terms of short-term deflection, long-term deflection, and punching shear and compared with the permissible limits. Also, the behavior of flat slabs with post-tensioning had been observed from the bending moment, shear force, and deformed shapes. Effect on reinforcement value because of post-tensioning is also observed. The results of the analysis showed that post-tensioning helped a lot to reduce deflection, bending moments, and shear forces. Also, reinforcement demand decreases by post-tensioning of flat slab.

Smart Rail-Gate Safety Alert System

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Abstract: According to NCRB statistics on railroad accidents, 32 persons perished every day on average. Unmanned railroad level crossings are to blame for 66% of these incidents. Trespassing and gate guards' tardiness in closing crossing gates are two of the leading problems. This study provides an overview of the ways in which such fatalities are prevented by our operational paradigm. Two gadgets make up our operating model, one of which is located at the station master and the other at the gatekeeper. The Internet of Things (IoT) can be used to accomplish this by creating connectivity between two devices, and ongoing monitoring of the date and time will help to determine when and who is accountable when the error has occurred. This prototype offers optimal security and level crossing accident prevention. The accuracy of the proposed system depends on the speed of the internet.

Mechanical Properties of Recycled aggregate Concrete with GGBFS

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This research is focused on the generation of imperishable concrete using RA and GGBFS. The use of recycled aggregate reduces the amount of concrete waste generated during construction, and the use of GGBFS as a replacement for fine aggregate further reduces waste by utilizing a by-product of the mechanical industry. The study investigates the effects of different levels of recycled coarse aggregate replacement (0%, 25%, 50%, and 100%) and fine aggregate replacement with GGBFS (up to 30%) on the various mechanical strength of concrete. The M-25 grade of concrete is used for the study. Study shows that compressive value of the concrete increased by 9%-15%, flexural values increased by up to 12%, and split value increased by up to 10% as compared to using normally recycled aggregate. These improvements in strength suggest that the use of recycled aggregate and GGBFS can produce sustainable concrete that performs well and is more environmentally friendly. The research contributes to the development of sustainable construction practices by reducing waste and utilizing by-products of the mechanical industry. The findings of this study can inform the development of future sustainable construction practices and may encourage more widespread use of recycled materials in construction.

Enhancing the Security and Performance of Watermarking Techniques using Machine Learning

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Abstract: The purpose of this study is to investigate the viability of applying watermarking methods to challenges in machine learning that aren't related to image classification and to determine the degree to which these methods can withstand attack from intelligent foes. The purpose of this study is to demonstrate that it is possible to apply watermarking models to a variety of machine learning methods such as MT, RL, BIC, and RNNs. To do this, the researchers will be changing and assessing the features of watermarking processes. This study also investigates how performance characteristics influence watermarking, as well as how successfully an opponent attacks. This research has the potential to contribute to the development of watermarking approaches for machine learning models that are both more secure and efficient. As a result, intellectual property can be protected from theft and infringement.

Convolutional neural network implementation based on SMOTE and Data Augmentation for lung cancer diagnosis

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Abstract: One of the most fatal cancer kinds is lung cancer; the chance of surviving a patient depends upon the stage of diagnosis. The earliest stage of lung cancer is when it is most treatable. However, lung cancer in its early stages frequently exhibits no clinical symptoms and is difficult to detect. Improvement in the survival rate assistant of Deep learning is helpful. Through this, we will try to acquire the suggested aim. A convolutional neural network is a very powerful deep-learning tool used to classify medical images. The lung cancer detection dataset's issue with imbalanced classes, however, restricts the classifier's effectiveness for minority classes. We propose two models SCNN and DACNN for imbalance processing technologies for huge datasets in order to increase the identification rate of classes with few images while maintaining efficiency. SCNN approach combines CNN with Synthetic Minority Over-Sampling Technique (SMOTE) and DACNN approach combines CNN with Data Augmentation. The SMOTE and data augmentation is used to increase the clarity of classes and avoid overfitting in building classification models. The proposed algorithm is tested on IQ-OTH/NCCD dataset. With

these combinations, the accuracy of these algorithms is achieved at 99.37% and 98.91%.

Preliminary Diagnosis of Diabetes Through Comparative Analysis of Supervised Machine Learning Techniques

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Abstract: When it comes to medical studies and the life sciences, Machine Learning already made a significant impact. The metabolic disease known as diabetes is characterized by continuously high blood sugar levels that do not respond normally to insulin. Early diagnosis of diabetes helps to maintain a healthy lifestyle. The article's content has centered on analyzing PIMA dataset-based diabetes patients and developing a machine learning-based detection model with minimal dependencies. Machine learning (ML) algorithms will be an effective strategy because they can be trained and tested using large amounts of data and can further improve themselves by making predictions. In this article, we use our gathered dataset to train several different algorithms, including Gradient Boosting, Decision Tree, Random Forest, Support Vector Machine (SVM), K-Nearest Neighbours (KNN) and Naive Bayes. After comparing the prediction results of all these algorithms, it was found that Random Forest provides us the most effective predictions.

Evaluation of oxidative stress in Channa punctatus upon exposure to clomazone

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Abstract: In this study, Channa punctatus (Bloch), a freshwater fish, was used to assess the effects of herbicide clomazone on its antioxidants. Glutathione levels were measured in the gills, liver, and kidney tissue of C. punctata after exposure to three sublethal concentrations (high dose of 0.5 ppm, mild dose of 0.25 ppm and low dose of 0.08 ppm) of clomazone using oxidized glutathione (GSH), reduced glutathione (GSSH), glutathione peroxidase (GPx), and glutathione S transferase (GST). The results clearly showed that at lower concentration of clomazone exposure (low and mild) the oxidative stress was feeble. However, under high clomazone dose exposure, C. punctatus showed spiked graph of oxidative stress.

Schiff's base assisted synthesis of silver nanoparticles for photocatalytic oxidation of methylene blue (MB) under UV light irradiation

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Abstract: Silver NPs display many unique physiochemical properties that can differ quite extensively from the properties of the corresponding bulk material. The wide applications of silver NPs profited from the progress in the synthesis of new nanostructured materials of varied sizes and morphologies. Hence, herein, we demonstrate the facile synthesis of Schiff's base assisted silver nanoparticles. The reaction of Schiff's base and silver nitrate in propylene glycol under nitrogen atmosphere at 160 °C resulted in silver nanoparticles. The phase and particle size distribution of newly synthesized silver nanoparticles has been analyzed by various analytical techniques such as UV spectroscopy, PXRD, TEM, and SEM data. The photocatalytic activity of newly synthesized silver nanoparticles has also been explored for the degradation of methylene blue.

Nanotechnology Carriers for the Management of Glaucoma

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Abstract: Background: The progressive degeneration of optic nerve, which results in vision loss, is a hallmark of the optic neuropathy known as glaucoma. Increased intra ocular pressure (IOP) is one of the variables that lead to the development of glaucoma, which can harm the optic nerve and impaired vision.

Methods: In order to effectively treat glaucoma, we looked into recent developments in the use of nanocarrier. We focused on the use of dendrimer, hydrogel, liposome, niosome, and nanoemulsion to improve anti-glaucoma therapy.

Results: The effectiveness of glaucoma medication is increased, and IOP and adverse effects are reduced by encapsulating anti-glaucoma drugs in different nanocarriers. These carriers exhibit regulated drug release and better drug

penetration even when administered intraperitoneally. The concentration of an anti-glaucoma drug in nanocarriers can be adjusted to increase local permissibility, retention time, and tolerance.

Conclusion: We clearly emphasize in the current review about recent advancements in the use of nanocarriers for effective treatment of glaucoma. The development of new, potent, and low dose system for the efficient eradication of glaucoma disease has been made possible by the development of nanocarriers.

Desirability Function Analysis Based Multi-objective optimization of Micro-ECDM Performances

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Abstract: Now a day's micro-ECDM tries to take part in the green manufacturing field. Machining depth enhancement and quality assurance of micro-fluidic channel generation on silica by ECDM process is a tricky issue. The paper shows effects of pulse on-time, pulse frequency, electrolyte concentration and applied voltage on machining depth (MD) and surface roughness (Ra) when mixed electrolyte is used in Micro-ECDM performances. Developed mathematical models analyze by ANOVA and maximum machining depth and minimum surface roughness has been found by desirability function analysis and contour diagram also analyzes the better experimental results of micro-channeling on silica glass by ECDM process. Multi-objective optimization results achieved at parametric combination of 50V/25wt%/55 µs/75 Hz. and SEM analysis also indicates the confirmation and validation of test results.

Multi-Response Optimization of Electro Chemical Discharge Machining Performances during Micro-Machining Operation of Silicon-wafer.

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Abstract: Silicon-wafer (Si-wafer) plays a vital role due to its semi-conducting nature. Parametric effects on Tool Wear Rate (TWR), Heat Affected Zone (HAZ) and Surface Roughness (SR) has been illustrated using NaOH + KOH with same percentage (%) in solution, altering Inter Electrode Gap (IEG) (mm), Duty Ratio, Electrolyte Concentration (wt.%), Voltage (V) and pulse on time (μs), during micro-machining of Silicon-wafer using WC micro-tool. Analysis of variances has been tested and mathematical models co-efficient are shown to analyze the fitness of experimental results and multi objective optimization has been propagated to minimize TWR, HAZ and SR using desirability analysis using Response Surface Methodology (RSM). The Scanning Electronic Microscopic analysis has been done to analyze the quality of Si-wafer micro-channel. It is found that multi-response optimization parametric combinations are 50.70V/48.23μs/40mm IEG/0.49 duty ratio/30wt% of NaOH and KOH of 1:1.

Enabling Multitask Learning in HTMs via ECG & Bitcoin Price Sequence Learning

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Abstract: The goal of Hierarchical Temporal Memory (HTM), a machine intelligence architecture inspired by biology, is to automatically categorize and understand flowing unlabeled data in order to identify abnormalities. It closely follows the Hebbian learning rule and is hence very performant when learning sequences. This work proposes the use of hierarchical temporal memory for multitask learning. It does so by separate preprocessing and encoding of different kinds of data with a shared architecture for training and testing. The HTM is used to learn two very different kinds of sequences - ECG wavelets and BTC prices. A by-product of learning this sequence is the corresponding anomaly scores that are studied to understand the behavior of the model, and further increase the utility of the model's continual online learning. The crux of this work, however, is to assess how performant HTMs

are when multitasking with drastically different representations - something that its biological inspiration does on a momentous basis.

Weather Based Plant Disease Prediction using Ensemble Learning

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Abstract: Plant diseases are a major threat to agricultural productivity and food security. It is essential to detect and control these diseases as early as possible. The growth and dissemination of plant diseases are greatly influenced by weather conditions. Parameters such as humidity, temperature and precipitation can affect the susceptibility of plants to diseases. By using meteorological data, farmers and agricultural managers can predict the likelihood and severity of plant disease outbreaks. This information can help farmers take proactive measures to protect their crops and ensure a sustainable and productive harvest. In this research, an ensemble model for powdery mildew disease prediction was used. The solution utilizes four models as a base model, viz. AdaBoost, Gradient Boost, Random Forest, ExtraTrees and XGBoost as meta model. To generate the synthetic data, CTGAN for synthetic tabular data generation was used to generate 1000 rows of data. Highest accuracy achieved was 98% on augmented data and 91.83% on original dataset.

Gender Recognition from Face images with HOG Feature Descriptor Using KNN and SVM

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Abstract: Classifying gender as a male or female considered as an easy task for human but it is not simple for the machine to recognize the genders. In order to make this process possible for a machine, a training mechanism is needed to give machine the ability to recognize human gender. This paper contributed in this field with a comprehensive comparison of the state-of-the-art gender classification methods. The objective of this study is to examine specifically two different well-known machine learning algorithms which are: KNN, and SVM, by using HOG feature extraction method. This research chose HOG because it is an outstanding feature descriptor, which significantly outperforms existing feature sets for human detection. Furthermore, our choice of SVM and KNN as classifiers are motivated by the desire to reduce the risk of over-fitting. This experimental research aims to determine the most reliable classifier algorithm in term of classification accuracy, precision, and recall. The experimental results showed that SVM had a great performance at

classifying the features as male or female, SVM result in 95.96% for classification accuracy.

Network Security Risks and Investigation of IoT Devices Using Digital Forensic

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Abstract: As a result of the IoT, billions of gadgets are now online at the same time. More and more people and businesses are eager to connect their equipment to the internet so that they may take advantage of the IoT's automation, simplification, and feature advantages. Everyday objects are getting online connections, including eyewear, smartwatches, stoves, microwaves, door locks, etc., with most of their data being stored in the cloud. Information is the lifeblood of digital forensics. There was a time when digital forensics only dealt with devices like computers and mobile phones that were physically present at a crime scene. Hard disks and other physical storage devices were our primary focus in the past. However, in the modern Internet of Things (IoT), data is frequently extensively dispersed across devices, clouds, and providers. Forensic investigators face new challenges and opportunities as a result of the proliferation of digital data outside traditional storage mediums. This paper explains, what are security breaches, and different IoT security challenges, due to the increase in IoT devices day by day. And investigate the IoT devices by using a digital forensics investigation process that consists of different phases. And finally, discussed recent IoT forensics approaches and frameworks overview.

Facial and Non-Facial Based Image Forgery Detection and Localization

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Abstract: The development of digital media and the availability of information over the internet, has led to the increase of crime over the years. The originality and authenticity of the images is lost upon tampering. Hence, it has become quite necessary to detect image forgery and localize the tampered areas. The implementation of the model produces the localized highlighted

area of the tampered region. The proposed system consists of detection of forgery (for both facial and non-facial images and videos) by applying deep learning algorithms such as RESNET-101 and the UNET. When trained with UNET alone, there was no difference found between the predicted mask and ground truth mask. Hence UNET was trained with segmented data (128x128 pixel patches) that provided appreciable good results. Later RESNET-101, acting as the backbone, along with UNET was trained on the dataset and this combination predicted the ground truth mask significantly better than the previous one. The proposed method has also been implemented for video forgery localization by giving an output mask of those frames.

A systematic review on malicious traffic detection using stochastic models

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Abstract: Malicious traffic detection system continually monitors traffic for any indications of suspicious links and connections that are sent or received. Enhanced malicious traffic detection techniques can determine whether a suspicious link is a type of malicious traffic coming from faulty URLs or C2 sites in order to detect malicious traffic. Typically, it compares the link to a massive quantity of security data generated from a large number of devices around the world. This safeguards against both well-known and unidentified threats. Several approaches for detecting malicious traffic based on various aspects, such as network traffic, opcodes, system call monitoring, and so on, have been proposed in the past. In this study, we have reviewed several existing approaches to detect malicious traffic that are based on stochastic models and provided an in-depth analysis and comparison. Furthermore, performance evaluation of every technique is given and compared based on accuracy and ability to detect unknown malwares.

Deep Learning based severity detection of TMJ dysfunction

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Abstract: TMJ dysfunction can cause serious health issues, such as inflammation and chronic pain that makes it difficult to carry out daily tasks. It refers to a medical condition that affects the temporomandibular joint (TMJ), which connects the jawbone to the skull. It is responsible for the

movement of the jaw, allowing us to speak, chew, and yawn. The condition can be caused by various factors such as wear and tear of teeth, an improper bite, arthritis, trauma, injury, teeth grinding, and stress. Common symptoms due to TMJ include earaches, headaches, jaw tenderness, and facial pain. The severity of TMJ dysfunction and the extent of its damage is determined through CBCT scans of the TMJ bones and the symptoms collected through medical observations. The objective of this research is to provide a deep-learning model for estimating the degree of TMJ dysfunction in patients. This would assist healthcare providers and researchers to detect and analyze several TMJ cases, thus technically establishing a relationship between medical diagnosis and Artificial Intelligence. In this paper, an attempt has been made to collect CBCT scans of patients from the dental clinic and classify the severity of TMJ dysfunction as normal, mild or moderate degrees.

Automated Mental Health Analysis from Speech Signals with Data Augmentation in a Fog-Based Environment

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Abstract: Depression and anxiety disorders are tremendously common across the world, imposing an undue strain on families, people, and society. According to studies, early recognition of mental health disorders can help with successful therapies. In the past few decades, deep-learned features based on neural networks have outperformed hand-crafted characteristics in a variety of domains. Thereby, we propose a system that combines both characteristics to accurately assess the degree of mental health illness based on speech signals with the help of Deep Convolutional Neural Networks. In the context of the health environment, preserving the secrecy and unlawful disclosures of massive healthcare data during transmission across diverse sectors, is a key problem. Using traditional cloud computing designs, it is impractical to transport huge amounts of diverse data for storage, processing and ensuring security. Thus, Fog computing is used which is an architectural technique that provides application-specific logic for network components between devices and the cloud.

Reliability and Cost Assessment of Manufacturing Unit with Switching on Demand

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Abstract: Cold standby sparing is frequently used for increasing system dependability while preserving the given finite system resources. Scheduled

backups are frequently used to store the completed sections of computing jobs since active components periodically fail and the standby component must take up the mission task whenever necessary. The backups can help a system recover effectively because the standby component can pick up where the primary component left off rather than having to start over from scratch.

In this article, a plate manufacturing firm is studied. The company produces full and half plates, two different types of plates. The system is made up of three similar units, the first of which makes full plates, the second of which creates half plates, and the third of which is kept on cold standby to initially generate entire plates. This study uses semi-Markov processes and the regenerative point technique to analyze the cost and reliability of a system that consists of a main unit and two replaceable, non-identical components

The system's state diagram considers all probabilities, failure rates, and repair rates for individual system parameters. Tables and graphs for the system parameters are created using specific values of unit failure/repair rates, followed by analysis.

An Investigation of Epoxy Hybrid Polymer Composites Reinforced with Carbon and Glass Fibers

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Abstract: Hybrid composite materials have great potential as engineering materials in a wide range of applications. Hybrid Composites have been acknowledged as cutting-edge materials for many technical applications because they combine two distinct kinds of high-strength fibres with a comparatively low-strength matrix to suit specific strength needs. Compared to making structural components from a single type of fibre, which may be too strong and not cost-competitive, they are lightweight and affordable. The desired qualities of a hybrid polymer composite can be controlled by selecting appropriate fibers and matrices. The properties of a material can be changed by incorporating multiple fiber types into the same resin matrix.

To examine their mechanical characteristics, a hybrid composite made of glass and carbon fibers was employed. Both 40% Carbon fibre and 60% Glass fibre and 60% Carbon fibre and 40% Glass fibre specimens were created using the hand layup technique. Under ASTM standards, the tensile strength, yield stress, elongation, flexural strength, and deflection of the hybrid composites were measured to determine their mechanical characteristics. When the proportion of carbon fibre was higher, it was shown that the tensile strength, yield strength, elongation, flexural strength, and deflection all improved.

An Overview on Bioplastics Opportunities for Sustainable Development

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Abstract: Environmental pollution is increasing day by day due to more plastic applications. Plastic material enters our food chain and the environment by employing microplastic and other plastic-based contaminants. Most plastics commercially used today are petroleum-based and can take over a century to degrade. Under combustion, plastics release cancer-causing carcinogenic chemicals that are equally harmful to people and the environment. In this regard, developing "environmentally friendly" materials have attracted extensive interest due to increasing environmental and health consciousness. One of the most innovative environmentally friendly materials developed recently is 'Bioplastics'. They are formed from renewable biomass composed of biopolymers, starch, cellulose, and various other sources such as sugarcane, wood, waste paper, vegetable oils and fats, bacteria, algae. Its significant advantages include a lower carbon footprint, energy efficiency and eco-safety. The global bioplastics market was expected to grow at the rate of 20% to 25% per year. The demand for packaging is rapidly increasing among retailers and the food industry. Hence, it is high time that biodegradable plastics (like bags, sacks, and films) should be a favoured choice for applications that demand an economical way to dispose of the item after it has fulfilled its job (e.g., food packaging, agriculture or medical products). Recycling systems, production technology and standardization, may be developed for sustainability within the allied field. Therefore, the main objective of this work is to look at aspects of biodegradable plastics from the perspective of applications, production, opportunities and future challenges. This review also focuses on the types of bio-based plastics and gives an insight into biological wastes that can be utilized to produce such plastics. Indeed, it is time to intensify innovations and research in this field to overcome the hindrances and develop viable processes for manufacturing bio-based plastics. This environmentally friendly approach can remove our dependency on fossil-based conventional polymers and lead us to a much more sustainable future.

Systems And Methods to Implement Smart Roof

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Abstract: Automation using Microcontrollers like Arduino Uno has become increasingly ubiquitous, but there are still many sectors where automation is yet to be fully realized. This paper suggests Improvements in existing outdoor roofing systems by automation integrated with features such as Light intensity and Rain sensing, thus, adding value to existing systems. Proper roof control depending on weather conditions would be possible without the user's need to manually do so. The program developed for this system consists of multiple functions such as rain detection, opening the roof, closing the roof, and so on. Users can even customize the conditions for the opening and closing of the rooftop by calling appropriate functions in the program. The use case of this system is focused on the floriculture sector, where the protection of plants from heavy rainfall and high-intensity sunlight is a must. Further, it can also be used as a rain shield in public areas like bus stands and parks, and places like outdoor parking and lawns.

Bi-LSTM based attention model with efficient tokenization for News Article Summarization

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Abstract: The objective of this research paper is to tackle the challenge of identifying the appropriate tokenization approach to enhance the precision of models employed for summarizing news articles. Tokenization is a critical step in the natural language processing pipeline. Choosing the most appropriate tokenization technique can be challenging, as different techniques may produce different results in terms of accuracy and efficiency. To overcome this challenge, a novel methodology is presented in this research paper that merges attention models based on Bi-LSTM with proficient tokenization techniques. This approach integrates multiple attention layers to extract crucial information from the input text, and the efficient tokenization techniques aid in enhancing the model's accuracy. Specifically, we compare the performance of Penn TreeBank, Moses tokenizer, and Spacy tokenizer on the new article summarization task and demonstrate that our proposed approach achieves an accuracy of 93% and a loss of 0.23. Overall, our results highlight the potential of using Bi-LSTM based attention models with efficient tokenization techniques for improving the accuracy of new article summarization. Our study provides valuable insights into the selection of appropriate tokenization techniques and demonstrates the effectiveness of our proposed approach in achieving high accuracy on this challenging task.

Histopathological Image based Oral Pre-Cancer Grading using Machine learning

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Abstract: Early detection of oral cancer can be achieved through pre-cancer grading. It is an important task in prescribing necessary treatment and medication for the patients. Due to its high mortality and morbidity rates, oral cancer tends to be discovered at a later stage and is fatal to the patients. The pathologists manually stain and analyse the histopathological samples of the patients and it is a laborious and time-consuming process. Artificial intelligence approaches have a considerable impact in improving diagnostic accuracy in all fields of medicine. The oral pre-cancer features extracted for grading are cell nuclei size, nuclei intensity i.e., hyperchromasia and cytoplasmic ratio from real-time dataset of histopathological images. The results are compared using several machine learning algorithms, out of which, random forest has an accuracy of 84.2%. This research aims to develop a diagnostic tool to aid medical practitioners for automatic and fast pre-cancer grading and establish the importance of early diagnosis of the disease.

IoT, A Driving Force to Connected Things: Issues and Challenges

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Abstract: Technologies are sprawling with additions to IoT. It has emerged as an area of unbelievable potential and growth of new infrastructure and technology. It becomes a boon for humanity with lot of advantages and are trying to empower the inanimate physical objects to act without any human intervention; Its centric concepts like augmented reality, Smart city, self-driven cars, smart environment, e-health care, etc. have a ubiquitous presence now. While these applications require higher data-rates, large bandwidth, increased capacity, low latency and high throughput. In light of these emerging concepts, this chapter review the enabling technologies of IoT that makes possible to predict futuristic techniques. It also shed light on concerned issues and challenges faced by these enabling technologies with their perspective solutions. Furthermore, it focuses on art of current state and future research directions of IoT.

CO2 Laser Optimization for minimizing surface roughness and HAZ in Laser Cutting process of Hastelloy C-276

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Abstract: One of the most popular production techniques is laser beam machining, which is used to cut, engrave, and weld a variety of materials, including metals, plastics, ceramics, etc. Hastelloy C 276 sheet metal is typically sliced using a CO_2 laser. The present study analyses the effects of adjusting parameters during CO_2 laser cutting, including cutting speed, laser power, and gas pressure, on the precision of the laser-beam-milled surface on sheet metal made of Hastelloy C 276. Response variables like HAZ and surface roughness are used to gauge the blade quality. A Taguchi method design is used to carry out experiment planning. By using main effect plots that are created using ANOVA, the impact of the process factors on response has been investigated. After the experimental design according to the Taguchi method, the evaluation is carried out with the use of a technique known as Analysis of Variance. The ratio of the signal to the noise is utilized to evaluate which measurement is the most accurate.

A Review of the Use of Machine Learning Algorithms to Handle Big Data Classification Problem.

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Abstract: We are living in an extremely high technology age where lot of technologies are emerging and stimulating massive quantity of data. These massive data in a tremendous velocity is a by- product of each domain of modern society, results in an accelerating Big data. Internet acceptance turns worldwide as a result many electronic devices such as smart phones, cell phones, laptops, sensors, smart kitchen, and household appliances provoked mammoth amount of digitized data. With the period of time data expanded in each domain. A domain like medical, credit card, banks etc. can be benefited from Bigdata analytics but extracting a useful pattern from these data's requires extraordinary skills. decision makers should be capable to get important insights from such wide-ranging and quickly changing data, ranging from daily transactions to customer interactions and social network data. The massive quantity of data available for analysis and information extraction is unclean and complex. This messy and imbalance data is the real challenge for ML Algorithms. Big data This paper aims to carry out diversified study of different tools, techniques and machine learning classification

algorithms for Big data and analysing them in terms of Cleanliness and reduction of complexity of Big data.

Study of photonic crystal fiber modeling using COMSOL for sensor design

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Abstract: This paper describes the study of photonic crystal fiber structure modeling for optical fiber sensor design using COMSOL Multiphysics simulation software. The use of photonic crystal fiber enhances the phase matching between optical fiber core guided modes and plasmon modes. PCF bring new strength to the fabrication of optical sensors since its distinctive capability of guiding the evanescent field penetration. There are certain number of air-holes in the PCF fiber which runs along the length of the fiber. For enhancing the sensitivity of the fiber, some parameters of the air-holes needs to be changed and then the structure is simulated with multiphysics software. By improving the width and depth of resonant curve, which are the two critical parameters, the PCF sensor bio sensing performance can be enhanced.

A Comparative Study on Rainfall Prediction Models Using Machine Learning Techniques.

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Abstract: Precipitation being one of most crucial factors for agriculture and nature itself, developing and designing an effective rainfall prediction model is very important. With the advancement of neural networks and machine learning techniques researchers over the decade have proposed various rainfall prediction models for different geographical regions of world. In this survey paper we have explained various machine learning algorithms and techniques which can be most effective in predicting rainfall by using different datasets and parameters. We reviewed models developed over the years and compared them by their accuracy, parameters used, limitations and geographical regions where they used. We also tried to find accuracy of various models like KNN (k-nearest neighbor), FFNN (Feed forward neural network) and ARIMA (Autoregressive Integrated Moving Average) etc. to better understand which models are most suited for rainfall prediction when applied. Based on survey, we are considering to develop a hybrid ARIMA model for rainfall prediction in India.

Numerical Investigation for Evaluating the Wind Effects on Interferences of High-Rise Buildings Having Varying Cross Sectional (Fish) Shape

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Abstract: The problem of predicting wind loads on tall buildings is complex and involves a large number of variables, such as wind speed, direction, turbulence, and the building's shape, size, and orientation. Additionally, interference effects between adjacent buildings can further complicate the problem. While there have been some research efforts to address this issue, such as wind tunnel tests and computational fluid dynamics simulations, there is still a lack of data available in international standards for predicting wind loads on complex building shapes and interference situations.

In this study, we analyse the along-wind effects on Interference of asymmetrical building with varying dimensions, but the same height and width of 600mm, using CFD simulations in ANSYS CFX, 2022 R2 and AutoCAD. The blockage in the present study is established by placing twin-building models in various orientations at a distance of 10% of the height of the model i.e., 60 mm. We compute the wind effects for wind incidence angles ranging from 0 to 180 degrees, with a 30-degree interval, using a mesh size of 0.005mm and 100 iterations. The Power Law equation is used to determine the wind speed profile within the atmospheric boundary layer. By comparing graphs of drag force, drag moment, lift force, and lift moment, we identify critical faces for different wind incidence angles.

Material recycling as one of the stages of the life cycle on the ecological building

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Abstract: The construction object should be considered taking into account the entire life cycle of the object. In the literature, we can find analyzes of life cycle costs, environmental and social impact assessments. In the analysis of the environmental impact of buildings, one of the stages is the assessment of the possibility of reusing demolition materials. In order to reduce the amount of waste generated in the course of business and construction activities, an obligation to recycle all possible construction waste was introduced. The regulations impose the achievement of a certain level of recycling, and cities and municipalities are obliged to prepare the latest reports in this regard. The article presents an approach to recycling, taking into account the requirements of the applicable law. The whole is supplemented by statistical data illustrating the situation in the area of construction waste recycling in cities and communes in Poland.

Blockchain IoT hybrid framework for security and privacy a healthcare database network

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Abstract: Deep concern rising in the healthcare system regarding medical data and computing medical customs. With the advancement in blockchain technology an advanced and more secure way of medical data management, sharing and other services can be implemented by combining IoT with Blockchain. This technology relies on the grouping of data into a block and holds sets of information and once filled are closed and linked to another block of data creating a chain of data. This paper creates high fidelity and secure way of storing data without any involvement of a third-party system. In this research, we harness opportunities and trends that blockchain provides in the advanced healthcare system and how integrating other technologies can lead to one of the most secure and automatic systems in the health sector and medicine, records serving.

Cost effective analysis of soil by virtue of electrochemical sensors

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Abstract: IoT in agriculture employs robots, drones, remote sensors, computer imagery, together with ever improving machine learning and analytical tools, to monitor crops, survey, and map fields, as well as provide data to farmers for logical farm management strategies that will save them time and money. In this article an investigation of rural agriculture which utilises a variety of electrochemical sensors is performed. Today's farmers are suffering from decreasing yields. Farmers are expected to choose crops carefully while having only a basic understanding of conventional farming. When the same crop is chosen throughout the seasonal cycle, soil fertility is reduced. This study intends to create a precise and effective system that can choose crops for optimal production by using machine learning (ML) algorithms and IoT devices. Compared to earlier manual laboratory test techniques, these systems are more independent. The proposed system, which is based on electrochemical sensors, can measure the soil parameters and select crops for optimal production in a timely and automated fashion. The electrochemical sensors measure the electrical conductivity, pH, and nutrient levels of the soil, and the ML algorithms are used to analyse the data and select the appropriate crops. The system's performance was assessed using a limited selection of crops. The outcomes demonstrate that the suggested system is a workable option for choosing crops for maximum productivity.

Booking system for small businesses incorporating MONGODB, NODE JS, REACT JS, EXPRESS JS in the web application

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Abstract: The demand for online services has been rapidly increasing globally nowadays. People find it challenging to rely on their own and seek time-saving solutions when unfortunate events such as difficulties develop at home. It is not easy to find suitable websites that provide services at the right time and price. As an outcome, this online service simplifies scheduling by making slots available with just one click on devices. Dimea-Dozen is a web application that focuses on maintaining social distancing between small businesses and regular customers by connecting them through an online platform. The application offers several categories and services while customers log in for their specific needs, shops are based on location,pincode and price. Using React JS to build websites provides faster, more efficient, and user-friendly performance. MongoDB is a scalable database that makes data management manageable, reducing delays and complexities for users.

Scalable Web Application Development

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Abstract: Developing web applications offers a new approach to producing dynamic web pages. With the growing need for efficient digital solutions, web applications have evolved into more interactive, engaging, and efficient tools. The development of web applications has traditionally been challenging. However, the use of modern development frameworks has made web application development relatively easier and faster. Web applications have become so ubiquitous that we often fail to recognize their presence. This is because web applications are hosted on a web server and delivered to the browser over the internet. Therefore, the development process of a web application is centred around creating interactions within the browser.

Violence Detection Based on Multisource CNN with Handcraft features

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Abstract: Today's latest video surveillance technology has recently been used to monitor human interactions in automated processing systems. They play an important role in security matters. There are many challenges in distinguishing between violent and non-violent. Supernatural activities Like crowded environments and camera view. In this article, we propose a deep novel violence against this structural system Based on specific features derived from craft methods and through which violence is detected. These features are related to the representation of the image, the appearance of the image, and their motion speed, and are fed as input to a neural network (CNN), which transforms them into spatial, temporal feature, and feature streams, trained a network through this spatial stream to recognize contextual patterns in each frame of video. This temporal stream consisted of three consecutive frames for learning each dynamic pattern of violent behavior. Differential measurement of optical flow. Furthermore, we introduced a discriminative feature with a new kinetic energy image to represent violent acts distinct from others in a spatio-temporal stream. The approach incorporates different aspects of violent behavior by combining the results of these streams. CNN is also called violence and trained label. They include hockey, movie and VP datasets that are crowded and not. These experimental results demonstrate that the proposed in terms of accuracy and processing time, the violence detection technique outperformed the prior study's results.

Violence Detection in Schools Based on Multi Fusion Sensor and Optimized Relief-F Algorithm

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Abstract: A widespread social problem is bullying in primary schools. Compared to school violence globally, primary school violence is seen as more harmful. Fusion and improved Relief-F algorithms are recommended as a multi-sensor-based method for early school violence detection. Data is collected by two motion sensors that play a major role in detecting violence in elementary school and in our daily life activities. A total of 9 types of violence related activities are checked. Time and frequency province characteristics, Using the improved relief-F approach, features are recovered and filtered. The authors then create a classifier with two levels. Random Forest is first level classifier which splits the jump function from others. In the previous paper

the author used decision tree classifier but in this proposed work random forest classifier is used and the following level identifies the remaining 8 categories of functions using network with radial basis functions. The recognition outcomes of the two sensors are then combined using a decision layer fusion method. Our research has shown that, on average, primary school violence can be recognized with an accuracy of 84.4%, whereas daily life can be recognized with an accuracy of 97.3%.

COVID-19 diagnosis using AI Deep Enhanced Res-Net model from Chest X-ray image

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Abstract: This research focuses on analyzing novel coronavirus (covid-19) from chest X -ray images with a deep learning (DL) -based model. The development of a revolutionary DL approach, Gov -19, is unique in this study of the development of a better residual reset. To create the proposed advanced reset, Standard Reset 101 is required for tuning. The updated resnet analyzed the new database made of 5,935 X -ray films, which were extracted from two database available in public. By reclaiming, multiplying and testing of many era, our recommended model is considerably better than normal, healthy lung restrictions in identifying Gov -19 pneumonia. Rating measurements include memory, accuracy, recall, and part under the Risaver Characteristics Coveness (AUC), F1 score and classification accuracy. Our suggested redemption continues to surpass other methods in the multiclassification problem using a pneumonia, lung -infused pulmonary and covid-19-infected lung samples. Detection Returns for Discrimination of COVID-19 in the test estimate for our advanced resnet to use Resnet101 as its foundation are 99.16%, 93.34%, and 92.71%for pneumonia and healthy normal lungs. The accuracy marks of our model for pneumonia and healthy normal lungs are 84.75% also 83.98%, respectively, which uses the ResNet-152 fine tune, respectively. Test results point out the possible use of our innovative CNN - determined model for classify the pneumonia and covid-19.

AI Deep Learning CNN and Machine Learning SVM for Elderly Care

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Abstract: Today, computer vision is widely used in medical fields, including healthcare and home automation. Based specifically on the intel d435i sensor, this research arranged computer vision for senior care explores a

reasonably priced, convenient, 3-dimensional, not in contact method. It is reliable for people, and this method is apt for long-term nursing of patients. This study recommends a deep learning, convolutional neural network (CNN)-based hand gesture system for geriatric care. These systems are the most popular for identifying Four different movements, extracting features from them, and classifying them into one of Four categories via a support vector machine (SVM). Our recommended technique is to help older adults who are often silent or voiceless and impotent to interact with others. To each hand signal represents a exact request, such as "water," "food," "toilet," "medicine," and "pain." and interprets each of these commands as a request to the microcontroller circuit, which then directs the signal by Global System for Mobile Communications (GSM) to the caregiver's mobile. Hence, the device was evaluated in a controlled setting; this study provides reliable results and can better provide a practical interface for ambulatory and elderly individuals with limb limitations towards communicate with their loved ones also caregivers.

Design and Development of a Deep Learning Based Resume Analyzer for Enhancing Recruitment Processes

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Abstract: A resume is used while applying for jobs. It contains details on their candidate's technical and personal background. A resume normally comprises numerous sections, including information about the applicant's schooling, skills and shortcomings, interests, and employment history. Create a list of the information and abilities that each component needs. By automatically examining resumes for important keywords, abilities, and phrases, employers may use the current resume analyzer programme to swiftly and accurately discover the most suitable candidates for a position. The analyzer analyses this data to create a thorough profile of the applicant and compare it to predetermined job criteria, making it simpler for recruiters to determine which applicants are best suitable for a certain post. The biggest challenge in reviewing resumes is volume. It takes a while to review each and every CV that is submitted. For every job position, more than 250 resumes are submitted, and around 88% of them are rejected as unqualified. Because of this, a lot of businesses consistently have a high time-to-fill %. By automating the laborious and time-consuming manual process of resume screening, the Resume Analyzer with NLP saves recruiters time and effort and frees them up to focus on other crucial elements of the recruiting process. By utilising this tool to quickly and accurately discover the top candidates for a position, employers may save time and money. The results of this study will be utilised to develop effective techniques for reviewing resumes that companies may use to choose the most qualified applicants for available positions. The non-parametric machine learning method K-Nearest Neighbors (KNN) is used for classification and regression applications. It is a straightforward yet effective method that may be used to many different jobs. In KNN, the training set's K-nearest neighbours are used to categorise the

output. The algorithm operates by determining how far apart the new observation is from every previous observation in the training set. Next, based on how far they are from the new observation, the K closest neighbours are selected. The majority class among these K nearest neighbours is then used to forecast the class of the new observation.

Hybridized Genetic Algorithm for Double Resource Flexible Job Shop Scheduling Problem

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Abstract: The classic job shop scheduling problem focuses on a single type of industrial resource, such as machine tools, and so on. Yet, in real production operations, job shop scheduling must constantly take into account the dimensions of various manufacturing resources. A double-resource flexible job shop scheduling problem (DFJSSP) is discussed in this study. In this DFJSSP, job shop scheduling takes into account both machines and employees. A genetic algorithm (GA) is employed to tackle this issue, which employs a novel well-designed three-layer chromosomal encoding approach as well as certain effective crossover and mutation operators.

Breast Cancer Diagnosis Using Machine Learning Algorithms

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Abstract: Breast cancer is a major cause of morbidity and mortality among women worldwide. Early and accurate diagnosis is crucial for improving treatment outcomes and patient survival rates. Medical imaging techniques such as mammography, ultrasound, and magnetic resonance imaging (MRI) are commonly used for breast cancer diagnosis. However, the interpretation of these images can be challenging and subjective, leading to potential errors and variability applied to assist in breast cancer diagnosis, such as logistic regression, support vector machines, artificial neural networks, decision trees, and random forests. This research paper reviews the current state-of-the-art in this industry and provides an overview of the different machine learning algorithms used, their advantages and limitations, and their comparative diagnostic performance. The paper also discusses the challenges and future directions in the development and application of machine learning-based breast Cancer diagnosis and suggests that further research is needed to validate these findings and develop more accurate and effective diagnostic models.

Fire & Gas Leakage Detection Using Arduino

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Abstract: In order to save human lives, alert systems that are part of domain security systems are crucial. Natural and man-made disasters have become more frequent in recent decades, with their catastrophic effects disrupting the social-economic balance and resulting in significant casualties in communities around the globe. The main reason why people die from thermal injuries is because of residential fire accidents. The highest age-specific death rates are found among children under the age of 5 and people beyond the age of 65. The highest rates of fatal fire events are reported among the most socially and materially poor homes, according to international research. Deaths from fires were more likely to happen in rented housing and in the homes in the most undervalued areas of communities. Because of this, creating a fire alert system is necessary. This paper proposes and discusses a low-cost advanced sensor-based gas leakage detector, alert, and control system. LPG gas sensor is used. we connect a flame sensor to an Arduino and learn how to design a fire alarm system utilizing both of these components. This system will not only detect gas leaks but will also alert users via audible alarms. The system is highly efficient, user-friendly, portable, compact, and cost effective.

Chitosan Hydrogels for Biomedical Applications- A Review

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Abstract: Chitosan hydrogels are ideal for drug delivery systems as they can release drugs at specific times and sites, preventing side effects and excessive dosages. Chitosan's bio-adhesive properties allow it to adhere to surfaces with negative charges, making it an effective carrier for drugs. Hydrogels made from chitosan derivatives are sensitive to pH and temperature fluctuations, making them an excellent choice for drug delivery. Chitosan-based materials are also used to promote wound healing due to their biodegradability, biocompatibility, and ability to accelerate wound healing. Chitosan hydrogels can also be used for tissue engineering by encouraging the regeneration of damaged or destroyed tissues. This review article presents an overview of the uses of chitosan hydrogels being explored and produced in biomedical areas such as wound healing, drug delivery, and tissue engineering.

Comparative experimental investigation of infill pattern and infill density on modelling process characteristics and mechanical properties of Polylactic Acid (PLA) material in Fused Deposition Modelling (FDM)

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Abstract: Additive manufacturing is potential and emerging technology widely being used to produce quality products with complicated profiles and customized features. Fused Deposition Modelling (FDM) process, a type of additive manufacturing technology using filament made of thermoplastic which is melted and subsequently extruded through nozzle. The main input process parameters of FDM are wall thickness, infill density, layer height, bed temperature, layer thickness, infill pattern, nozzle temperature etc. In this experimental work, a cube was 3-D printed by Ultimaker 2+ FDM printer using PLA (polylactic acid) material. The parameters selected for this experimental study are infill density (20%, 40%, and 60% for compressive strength and 100%, 80% and 60% for tensile strength respectively) and infill pattern (Grid and Tri Hexagon shape). The output parameters considered in this research work are printing time, weight of printed material, filament length consumed, volumetric accuracy after 3 D printing. It was found that printing time, weight of printed material and filament length consumption increases if infill density is increased while varying the infill pattern is insignificant for above process characteristics. It was also revealed that volumetric inaccuracy increases after increasing the infill density and shifting the infill pattern from tri-hexagon to grid type of pattern. The effect of infill density and infill pattern were also studied on the compressive strength, tensile strength, and yield strength of PLA material.

Advanced medicine reminder system

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Abstract: This paper discusses the challenges faced by the world in addressing public health issues, particularly non-communicable diseases (NCDs) affecting more than 20% of the population. One of the significant challenges in managing chronic illnesses is medication non-adherence, with almost half of the patients not taking their medication as prescribed. This article emphasizes the importance of medication adherence and highlights the potential of medicine reminder systems (MRS) to address this issue. The existing MRS, using electronic components and a mobile app, is described in detail. The existing system offers sophisticated reminders to detect missed doses, track medication adherence, and display reminders on a user's mobile device. The developed system was tested and compared with the MRS based

on device-only and smart app-based applications. The developed system was found to be affordable and effective for patients, with a hardware cost of around 50$. The developed device's detection limit (LOD) was 50mg. The system also detects the presence and the absence of the medicine packet and the opening time of the medicine box to help keep track of the medicine taken. The medication reminder and organizer feature provide better control over medication adherence and can be used by patients, healthcare providers, caregivers, clinical trial sponsors, and pharmaceutical companies. The system uses a short message service (SMS) to send the reminder message to the user. However, concerns about privacy, security, and over-reliance on technology must be addressed. The future applications of medication reminder systems in healthcare settings are vast, and the technology will continue to advance, providing innovative solutions for managing medication schedules.

Advent of an In-Vitro Bioanalytical Approach for Vilazodone in Biological Matrices uses Modified QuEChERS and LC-MS/MS

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Abstract: Antidepressants are form of psychotropic drugs that are frequently abused, even though they are prescription medication. With the evolution of analytical techniques, numerous methods have been developed for extracting antidepressants from complex biological matrices. However, these techniques are still in their early stages and require further evaluation, especially in clinically and forensically relevant matrices. This study aimed to determine the optimal conditions for analyzing serotonin modulator antidepressants using liquid chromatography with tandem mass spectrometry from biological samples. A modified QuEChERS extraction method was used, and Vilazodone was quantified using liquid chromatography and tandem mass spectrometry with electrospray ionization in positive mode. The test sample's injection volume was kept constant at 10 uL, with concentrations ranging from 5 to 200 ngmL-1. The quantification and detection limits were found to be between 02.21-14.28 ngmL-1 and 06.70-43.26 ngmL-1, respectively. This study is the first to demonstrate that Vilazodone can be effectively extracted from biological matrices with a high recovery rate (>75%). This approach can be useful for extracting Vilazodone from various biological matrices as it requires a low amount of solvent, thereby reducing waste generation.

Dielectric studies of a new $0.5Ba_{0.8}Ca_{0.2}TiO_3.0.5CaCu_3Ti_4O_{12}$ composite fabricated by chemo-mechanical process

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Abstract: In this manuscript reports a simple, cheap cost and environment-friendly chemo mechanical route for preparing a high dielectric material, $0.5Ba_{0.8}Ca_{0.2}TiO_3.0.5CaCu_3Ti_4O_{12}$, (BCTCCTO) composite materials through combustion of metal nitrates in non-aqueous precursor solution using solid TiO_2 powder with cost-bearing titanium isopropoxide, $Ti(OR)_4$. BCTCCTO composite is exhibiting pure phase by chemo mechanical route. X-ray diffraction was revealed the formation of major peak of BCTCCTO composite at 1000°C 15h. The micro structural properties have studied grain and particle size by the Scanning electron microscopy and Transmission electron microscopy. The elemental homogenous composition of element as a specific portion was confirmed by Energy dispersive X-ray mapping. X-ray photoelectron spectroscopy was showed the presence of oxidation state of the metal ions. The obtained results are discussed dielectric relaxation processes at particular temperature and frequency. The high dielectric constant was exhibited on high temperature with low frequency due to interfacial polarization.

Fake News Detection using LSTM and Logistic Regression

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Abstract: In this informational age, whether we examine a bit of writing or watch the news on television, we look for a sincere supply. Internet plays a major role for providing any information or news, people rely on this very much, but the internet and social media are both full of false information. Misinformation or news that has been edited and posted on social media with the intention of harming a person, business, or enterprise is referred to as fake news. This false information can affect a person life adversely. Disasters might result from the spread of false information in urgent circumstances.

The need of fake news identification is a must. The spread of fake news necessitates the development of computer algorithms to identify it. We have therefore included Machine Learning algorithms and techniques like NLTK, LSTM in order to prevent the harm that can be caused by spread of false information through technology.

Smart agriculture system: A miniaturization approach based on IoT

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Abstract: The Internet of Things (IoT) is an incredibly useful, rapidly-growing technology that has revolutionized the way many industries operate. It has enabled the implementation of computing and communication capabilities that were previously not possible. IoT is being utilized in many different applications, such as home automation, smart health, smart cities, air pollution monitoring, and water distribution. It has revolutionized many industries, providing solutions to various challenges, such as moisture, soil, and water level monitoring, drought management, and pollution control. The nanotechnology has been making its way into the smart agriculture systems, the combination of IoT and nanotechnology can be used for soil quality monitoring effective miniaturization and agriculture equipment. This study provides an effective methodology for monitoring humidity, soil conditions, water levels, and climatic conditions. This can be utilized to better understand the environment and provide more accurate and efficient solutions. IoT has the potential to revolutionize the way we interact with the environment, providing more sustainable and efficient solutions.

Implementations of Welfare DOAM

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Abstract: This paper describes the design and implementation of Welfare DOAM, a web application aimed at facilitating the delivery of welfare services to the public. The website was created using HTML, CSS, and JavaScript and is hosted on a cloud-based platform. The paper discusses the features of the website, including a user-friendly interface, secure login system, and responsive design. The algorithm used in the website is also explained in detail. The research paper provides insights into the design and implementation process, including the challenges encountered and the solutions adopted. The results of the study demonstrate the effectiveness of

using modern web technologies for the development of user-friendly and accessible web applications.

Development and Validation of a QuEChERS-Based LC-MS/MS Method for Determination of Didanosine from Biological Matrices

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Abstract: In recent times, there has been a surge in the use of antiviral medications due to the ongoing pandemic, leading to the prescription and abuse of various antiviral agents. Unfortunately, most antiviral drugs target host cells, which can cause toxic adverse effects. Antiretroviral drugs, in particular, are often used in combination with other drugs, leading to adverse drug-drug interactions. For instance, Didanosine is known to cause severe toxicity in humans. In this study, we developed and validated a forensic LC-MS/MS method for the detection of Didanosine in biological matrices, including urine, saliva, and gastric lavage. The method was developed using a modified QuEChERS method for sample extraction and validated according to SWGTOX guidelines for bio-analytical methods, demonstrating excellent linearity, precision, and accuracy over a linear range of 5-200 ng/mL. The limit of detection ranged from 8.92 to 25.33 ng/mL, and the limit of quantification ranged from 27.02 to 76.77 ng/mL. The validated method was applied for the forensic detection of Didanosine from urine, saliva and gastric lavage with excellent assay ruggedness and reproducibility. This method can also be extended to the detection of other antiviral drugs.

Polycystic Ovarian Syndrome (PCOS) identification and diagnosis using Machine Learning

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Abstract: PCOS, commonly known as a polycystic ovarian syndrome, a medical condition that majorly affect women who are in their reproductive age. PCOS affects more than five million women globally who are of reproductive age.

Missed periods, irregular periods, or extremely light periods are some of the most typical signs of this condition. Furthermore, it may result in enlarged or heavily cystic ovaries, excessive body hair on the chest, stomach, and hirsutism, weight gain, particularly in the abdomen, acne, or oily complexion. PCOS's precise pathophysiology is still unknown. The ovaries are the key feature of this diverse illness. Through clinical data, machine learning (ML) is able to "learn" features from very large amounts.

With the help of a very good and essential set of statistically assessed criteria, this study paper provides a solution to the issue that aids in early diagnosis and prognosis of PCOS therapy. The solution is constructed using ML algorithms such as: (1) Random Forest Classifier, (2) Logistic Regression, (3) K-Nearest Neighbor (KNN), (4) Support Vector Classifier (SVC) and (5) Decision Tree.The random forest model produced the most accurate results (91.02% accuracy).

A Study on New Radiochromic film (Gafchromic) for Ultraviolet Radiation

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Abstract: Dosimetry measurement of solar ultraviolet (UV) exposure is crucial for advancing our understanding of UV exposure and the consequent health complications. The broad-band responses of radiochromic film with ultraviolet, visible, and infrared light emitted by a solar simulator is evaluated, and dosimetry in UV radiation is investigated. The Gafchromic EBT-XD is developed for measuring ionizing radiation doses that have been absorbed. It is especially well suited for photons with high energy. This film's dynamic range is particularly created to function at its peak in the dosage range between 0.4 and 40 Gy, making it ideal for procedures like SRS and SBRT. A novel Gafchromic film, type EBT-XD, made especially for high-dose radiation assessments was evaluated in this study. It became commercially accessible in spring 2015. In order to verify a typical high dose SRS treatment, it gives an assessment of this novel film in contrast to EBT3 in both traditional single-channel dosimetry and triple-channel dosimetry modes. The use of reliable film dosimetry methods is made possible by the use of linear dose scaling with reference films and glass compression plates for scanning film flatness.

Short review: To Enlight the Enabling Factors for Aluminium at 2030

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Abstract: Aluminium, one of the widely used key elements to make enhanced properties inbuilt composites for different applications. In late eighteen itself, scientists are found aluminium as "the metal of future" and they segregated out around two hundred main aluminium constituents from thousands of named minerals. Deville's method, Bayer method, electrolysis, Cowles Kayser method, Moldentrauer process and etc. are for reduction into aluminium. From all days aluminium is chief element or component in structural application, electrical application, transport automobiles, household, and travelling utensils, chemical or thermal plants and etc. Always metal matrix composites are offering such a miracle property combination in a wide range of industrial engineering applications. The latest developments in new age minerals, such as matrix Al nanocomposites, nanoplatelets reinforced Al nanocomposites, net shaped Al nanocomposites, nanomaterial implanted Al nanocomposites, and others, are being reported by aluminium researchers. The main tailoring properties for aluminium composites are high mechanical strength, low thermal expansion coefficient high thermal resistance, excellent damping capacities, high wear resistance, high stiffness good corrosion resistance. Aluminium composites or hybrid composites are a new era in applied aluminium industries and metal matrix composites. It satisfies the demands of high mechanical properties to conventional applications. Aluminium matrix also composites a class of high performance with lightweight aluminium material systems. Here, the reinforcement is happening by continuous fibers, discontinuous fibers, whiskers, particulates, etc. The properties of the materials system depend on the volume fractions of the components, and it can tailor to the demands of different applications of various industries. Aluminium alloys are the primary materials for aerospace applications. The role of aluminium composite alloys is extensive in future aircraft by high-strength aluminium alloys, and it will make aluminium composite alloys valuable airframe materials. And here, we're emphasising the characteristics that encourages the national development. It was unlikely that the objective of the specialists was to integrate new-age mineral and materials suppliers through brand projects like brown field expansion projects for futuristic applications.

Artificial Intelligence and Cloud Computing based Model and Design of E-Vehicles Integrated with Wireless Technology and Sensors

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Abstract: E-vehicles, also known as electric vehicles (EV), are vehicles that can be powered by an electric motor that draws power from an external electrical source and stores it in a battery for later use. It is based on an electromechanical system. The advancement of electric vehicles reduces CO2 emissions in the atmosphere. It aids in increasing the use of renewable energy sources whenever there is a demand in the grid's electrical supply. The hybrid electric vehicle contributes to fuel conservation in a variety of ways. Effective utilisation of electric supply from the grid using optimization techniques with proper charging and discharging aids in demand side management. The electric vehicle contributes to a greener ecosystem by reducing contaminated air in the environment. The Implemented EV system's performance is checked by us w.r.t. with RES, Regenerative braking, Battery's Performance analysis. This is accomplished using Artificial Intelligence (AI) techniques. The sensors detect the external physical parameters. The overall performance is monitored using a two-way communication system implemented using cloud computing techniques and wireless technology.

Weight Sensor Device to Perform Physical Science Experiments by Students with Visual Impairment

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Abstract: The practical work of science being rather impractical for students with Visual Impairment. The students with visual impairments have limited participation in labs. Without access to full participation in labs, students with visual impairments are hampered in their learning. This study aims to develop and weight sensor device to make accessible physical science laboratory experiments. Arduino based Sensor Device have been developed and this device measure the weight and gives auditory output in science lab settings.

Characteristics and Major Applications of Mobile Ad-hoc Networks

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Abstract: Wireless ad-hoc networks have grown to be one of the most active and lively areas of communication and networks as the use of mobile devices and wireless networks has substantially risen over the past few years. Ad-hoc networks have garnered a great deal of interest from the scientific community and industry in recent years as a result of breakthroughs in wireless networks, which have resulted in substantial technical advancements. MANETs are networks composed of wireless mobile nodes that may connect without the need for fixed network infrastructure or centralized administration. Examples of Mobile Nodes in MANETs include mobile phones, laptops, and PDAs. A network called MANET allows entities that may be mobile to communicate with one another without the use of any established infrastructure. These networks are crucial in a variety of practical applications, including monitoring systems, healthcare, the military, tracking one's movement, and disaster recovery, among others. Ad-hoc network essential issues are discussed in this paper by providing background information on relevant research, such as the idea, attributes, state, and weaknesses of MANET. This paper provides insight into the features of MANET and potential applications of ad-hoc networks. It also provides an overview regarding the areas of implementation in real-world scenarios of the present and future.

Moringa Oleifera in Drug Delivery

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Abstract: Humans have been using plants for nutrition and medicines for thousands of years due to their easy availability and great abundance. This essay will focus on Moringa Oleifera, also referred to as the Miracle tree and the Drumstick tree, due to its enormous nutritional and therapeutic potential. We will also go through the current study on M. Oleifera's potential role in medication delivery and how it is developing into a successful treatment for malnutrition.

A Novel Algorithm for a Framework of Big Data in Cloud Environment

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Abstract: The security of confidential data has become a key problem that affects the functioning of a variety of cloud services. The confidentiality, integrity, and accessibility of data are the foundations of the common concept of data security. The approach to protecting enormous amounts of information on the cloud is becoming less frequent as a result of a lack of available resources. There are numerous methods available to maintain anonymity, Moreover, the rapidly growing amount of data has also led to many problems in the real world. During data processing and transmissions, the execution time of big data encryption is one of the most important factors. Many current applications don't encrypt data because they need to reach a certain level of speed and privacy concerns. Therefore, this paper proposes a novel encryption framework that enhances the privacy and confidentiality of the big data in the cloud using the XOR Public and Private Key-based Double Elliptic Curve Cryptography algorithm. Our proposed algorithm also provides more security using Access Pattern Matching with Big Data- Map Reduced.

Minimizing Makespan using Hybridized Genetic Algorithm with Tabu Search for Flow Shop Scheduling Problem

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Abstract: To decrease makespan, in this paper we integrate the tabu search process with a genetic algorithm by using a novel partial opposed-based population initialization approach. Flow shop is a significant scheduling variation with several applications in a range of fields, including manufacturing. Because it is classified as an NP-hard issue, numerous academics have developed techniques to tackle it. Several techniques, particularly evolutionary algorithms, have been developed to address production scheduling. Because of its capacity to deliver good, rapid, and efficient results while exploring complicated solution space, the genetic algorithm has become the most commonly employed algorithm in evolutionary to handle production schedule (global search). Yet, while undertaking exploitation (local search), it produces useless results since it is easily locked in the optimal small area.

Tabu search, on the other hand, outperforms local search in order to prevent genetic algorithms from becoming locked in a local optimum. Combining these two techniques results in the initialization technique yields a novel algorithm that balances searches, resulting in higher quality results. To evaluate the

method performance, 120 issue examples were used to test the suggested approach. According to the empirical data, the created method outperforms the six existing hybrid algorithms in 115 out of 120 instances.

Ensemble Model for Strawberry Plant Diseases Detection and Classification

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Abstract: Over the world, strawberries are a highly valuable crop. It contains several vitamins and minerals. But the various diseases that occur in the strawberry plants can reduce their yield and quality. Farmers find it challenging to recognize the various diseases that affect the crop, due to a lack of knowledge about these diseases. In this paper, we proposed a DCNN-based Ensemble model by using the simple model averaging ensemble approach in which we trained the pre-trained DCNN models on the same dataset, and their predictions are averaged to get the final prediction. In this research, we predicted the five types of strawberry diseases and healthy leaf. This model was able to predict the diseases effectively with 96% Validation Accuracy. So, this proposed ensemble model will be helpful for the farmers to identify the diseases early and take preventive measures before the disease spreads and causes serious harm to their crops.

Analysis of thermal behaviors of pits reinforced polymer composite

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Abstract: Composites are made up of at least two different materials, combined in such a way that their combined performance exceeds that of any of the individual parts. Natural strands as fortification are earth-friendly, non-exhaustible, nongrating, eco-friendly, consumption-resistant, and biodegradable, and they provide a means of improving the quality, strength, and protection from temperature creep of composites at a reduced cost. Across the many states of India, there is a sizable supply of jujube trees, and the wood from their fallen branches may be utilized in the creation of new products. Polymer composites are designed to reinforce polymeric materials.

The current test work is structured similarly to the aforementioned materials to obtain this novel composite. Testing the composites' thermal characteristics is one example of a physical test.

A Study on Mechanical Properties of Ni-Based Superalloy 718 at Elevated Temperatures

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Abstract: Tensile deformation and fracture behaviors of superalloy 718 were investigated by conducting tensile tests. The tests were performed over a range of deformation temperatures (300K to 800K) with constant strain rate $(3.3 \times 10^{-3} s^{-1})$. Detailed discussion is presented on the impact of temperature on flow behavior and fracture characteristics, revealing that elevated temperature has a significant effect on flow behaviors. The tensile yield strength (σ_y) decreased from 410 to 228 MPa, ultimate tensile strength (σ_u) decreased from 835 to 620 MPa, the modulus of elasticity (E) decreased from 205 to 128 GPa, and elongation increased from 47.0 to 68.30% with increasing temperatures. The reduction-factors of all the above properties indicate their sensitivity to elevated temperatures.

Design and Implementation of Waste Gas Decay & Disposal System on FPGA

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Abstract: Radioactive waste storage and disposal management is a difficult task. This paper proposes a waste gas decay and disposal system to maintain a negative pressure inside the hot cells containing the PET radio-pharmaceutical synthesis modules and extract the contaminated air (which may typically have airborne F-18, N-13, or other radioactive gases) from the hot cells during the synthesis of radiopharmaceuticals. The extracted air is then compressed and stored in high-pressure cylinders until it decays for the recommended period. Once decayed, the air, which is no longer contaminated, is released suitably into the atmosphere. The Waste Gas Decay and Disposal System is for the safe and secure production of radiopharmaceuticals, limits the dose to radiation workers, and prevents the environment from releasing decayed gases into the atmosphere below the permissible limit. This system is implemented in an FPGA environment.

Clothing Rental System

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Abstract: Customers can now rent the clothes of their choice, and it show how many clothes are available and their colour at the time of renting the clothes. It's very simple to use, the shopkeeper only needs to register the customer once with a customer ID, after which any transactions made with that ID will be saved in the system. The shopkeeper can easily keep track on how many transactions take place. This software is very easy to use it has a very simple user interface. It takes no specialised knowledge to use the software and the system operates very effectively.

Simulation Research on Improvement of Voltage Stability of DFIG based Wind Farm Connected to Grid Using TCSC and STATCOM Controllers

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Abstract: This research paper proposes a combined control approach of TCSC and STATCOM for symmetrical three-phase faults in grid-connected wind farms. In order to implement the grid-connected wind generation system in the proposed plan, a combined control strategy based on STATCOM double closed-loop feedback control and TCSC device is used to make sure the system has enough reactive power to keep its regular functioning throughout operation. The relevant simulation model of the wind power grid-connected system is created using MATLAB/Simulink. The combined control of TCSC and STATCOM demonstrates that the minimum reactive power is demanded and reach the stable value of reactive power more quickly as compared to other combinations by analysing the waveforms of reactive power requirement during the working examples and comparing them with TCSC only, STATCOM only, and TCSC-STATCOM. It was shown that TCSC and STATCOM working together could quickly and successfully restore the bus voltage at the point of network connection. Wind farms after a fault, with good performance to increase low-voltage ride-through capability and voltage stability of a wind grid-connected system, and using TCSC and STATCOM together has a superior cooperative control effect than using TCSC or STATCOM separately.

Novel, Energy Efficient Routing Protocol for Dynamic Data Transfer in Wireless Sensor Networks

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Abstract: Wireless Sensor Networks has huge amount of applications as it provides cost effective solutions for monitoring various processes in industry, health care etc. Each node has limited energy storage capacity, its communication range is also very limited. For sending sensed data to long distances, its stored energy may not be sufficient all the time. So, Clustering and Cluster Head selection are the two important mechanisms that are required for the network. To minimize energy consumption of the network, here it is proposed a Novel Dynamic data transfer Routing Protocol (NDRP) for energy efficient data transmission. In this proposed NDRP protocol, dynamic routing along with sleep-wake up concept are introduced. With the help of this proposed NDRP, improve the throughput, and reduce the overall network energy consumption. The simulation results and the analysis show that the proposed NDRP is better than the existing LEACH protocol.

Vulnerability Analysis Framework for AI-Based IoT Medical Device Data

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Abstract: In this contemporary era, Internet of Things-based devices is established in all domains, especially in the medical field, as it is the need of the hour. IoT can be agreed as a network or network of equip- ment and computing devices that can record, interchange, and perform digital and physical tasks with that data without human involvement. It is crucial to secure the data during transmission between devices. There is enormous growth in medical equipment, so it is obligatory to recognize its vulnerabilities. In the Artificial Intelligence domain, transfer learning is a technique in which a model employed for a particular problem is used as the component for solving other related issues. This paper proposes a new framework to examine the identified vulnerabilities during data transmission. To detect and analyze IoT software-based vulnerabilities in medical devices, Artificial Intelligence models using transfer learning are considered. This framework includes a White-Box cryptography scheme for encrypting the data during the data transmission from IoT devices to cloud storage. Also, it sketches the trials associated with medical IoT devices.

Harmonic Filters Design for Nonlinear Loads and Measurement

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Abstract: Harmonics are harmful for electrical devices since they can cause damage, less efficiency, less productivity, and malfunctions to the devices so it is very important to address these harmonics and to minimize as much as possible for better efficiency and productivity of the devices. This paper uses different filters to reduce the voltage and current harmonics produced by non-linear load in the AC supply system. To evaluate the performance of different types of filters a test model with non-linear load is designed in MATLAB (R2017a). In this paper, five types of filters Shunt passive power filter, series active power filter, shunt active power filter, and two types of hybrid filter (Shunt passive power filter & series active power filter, Shunt passive power filter & shunt active power filter) are designed and total harmonic distortion of AC voltage and current is calculated. Here first, third, fifth, seventh, eleventh, and thirteenth harmonics of voltage and current are calculated in percentage.

Techno-economic analysis of hybrid standalone systems for electrification of a remotely located village in India

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Abstract: To improve the economic conditions of remote areas and to advance the general development of the nation, no electrical power deficiency should be in the villages. In comparison to urban electrification, rural electrification is more expensive. The goal of the research is to determine the best hybrid renewable energy system (HRES) combinations from the resources available in a particular village area that can sustainably meet the power demand and determine whether this is a financially viable solution. This study's primary objective is to discover and develop an HRES that can meet the community's demands while also being dependable, consistent, and sustainable. The study also determines the recommended system's least cost of energy (COE) and net present cost (NPC) using HOMER Pro software. In this work, the COE per unit for the various combinations has been established following an analysis of the resource and demand estimations. Combining PV, a WT generator, and biogas is the least expensive and most practical alternative, with batteries having a COE of around $17.24/kWh.

The Aftermath of COVID-19

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Abstract: The end of 2019 gave fear, panic, and emotional and mental stress to the world in the form of Coronavirus also known as COVID-19 which is a disease caused by severe acute respiratory syndrome coronavirus 2(SARS-CoV-2). COVID-19 was declared a Public Health Emergency of International Concern by the World Health Organization on 30 January 2020. The common symptoms of coronavirus are a common cold, fever, headache, and breathlessness. It enters the body by inhaling virus droplets brought on by coughing, sneezing, or touching an infected surface [11]. Clinical researchers made every effort to discover a coronavirus therapy with a quick recovery time and no adverse effects, but as of now, there is no such thing. Although allopathic and ayurvedic treatments have been approached as the cure for coronavirus. In allopathy, many antiviral drugs were used to stop coronavirus from deteriorating the health of patients. On the other hand, ayurveda also showed effective results on COVID-19 patients, many herbal plants like Giloy, Ashwagandha, and Mulethi were used to improve the health recovery of patients This review will summarize the impact of COVID-19 all over the World and the effect of allopathic and ayurvedic to cure and improve health recovery of coronavirus patients.

Skin Cancer detection based on Deep Learning Network Architecture- An Analysis and Review

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Abstract: Skin cancer is one of the most dangerous forms of cancer and is caused by the formation of mutations in skin cell DNA. If identified early and treated properly, the cancer can be managed, however, if it is not detected in time, it can spread to other parts of the body. According to the estimates of 2022, there will be 7,200 deaths due to malignant skin cancer. Computer aided diagnosis (CAD) is a non-invasive technique used to diagnose the cancer automatically. This technique is composed of four distinct steps: accurate pre-processing, efficient lesion segmentation, significant feature extraction, and precise classification. In recent years, a lot of research has been conducted to apply machine learning, deep learning, and neural networks for classifying skin cancer. This review paper provides an overview of the research

done in this field, and presents the results in the form of tables, techniques, and structures for improved understanding. Additionally, it emphasizes the advantages of using CAD for diagnosing skin cancer, such as cost-effectiveness and time-saving.

Drought Vulnerability Assessment in Chennai Aquifer Region: A Remote Sensing-GIS approach

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Abstract: The Chennai aquifer system, which identified in the south- ern part of India experiences a severe drought during 2019. In this study drought-vulnerable areas of Chennai aquifer region is located using the AHP (Analytical Hierarchical Process) method. The variables used in this analysis were Land use Land cover (LULC), population density, ele- vation slope, aspect, Vegetation Condition Index (VCI), Normalized Dif- ference Water Index (NDWI), Normalized Difference Vegetation Index (NDVI), Normalized Difference Drought Index (NDDI) and Soil Mois- ture Index (SMI). The drought vulnerable region in Chennai aquifer was determined based on weights applied to each variable in a paired con- ditional variable matrix. Nearly 51.66 % of its territory, which is in the moderate category of drought, is then follows the high (45.81%), very high (4.54 %), and low (0.009 %) categories. The groundwater and rain- fall time series for the region is plotted and trend in the area is analyzed from 2002 to 2021. It demonstrates a downward tendency in the Chennai aquifer area.

A Two-stage Mammogram Enhancement Technique for Mass Detection

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Abstract: Breast cancer is a serious concern for women. Yet, early detection and diagnosis of breast cancer can significantly lower the fatality rate. Due to their subtle nature, masses—a particular type of abnormality that is visible on a mammogram—are an early sign of breast cancer that are challenging to detect. Mammograms typically produce low-contrast images, making it challenging for even experienced radiologists to distinguish some of the tumour lesions from the surrounding normal tissues. To address the issue, this paper introduces a computer aided mass detection method based on a hybrid mammogram enhancement technique. A combination of contrast-limited adaptive histogram equalization and a hyperbolic tangent-tunicate

swarm algorithm is proposed as a mammogram enhancement technique that can improve mass detection sensitivity. Using the enhanced mammograms, the mass detection system achieved a sensitivity of 96.22% and 2.27 false positives per image (FPs/I) when evaluated on 450 mammograms from the DDSM database.

Dynamic Economic Load Dispatch for Thermal and Wind Generator with Ramp, Reserve Constraints

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Abstract: To generate the best result from the complicated optimization problem various power plants uses dynamic economic load dispatch (DELD). Without dynamic economic dispatch management of various power system functions cannot be done. Here GAMS (General Algebraic Modelling System) software is used to solve the various problem of dynamic economic dispatch. Although evolutionary algorithms can be used to solve this problem, their performance is dependent on numerous parameters, including the control parameter, population diversity, and constraint-handling technique. Here a set of algorithms are introduced to improve the performance of evolutionary ones by taking advantage of various constraints-handling mechanisms and a diversity mechanism in GAMS. The term "DELD" refers to a group of units being dispatched across a certain operating horizon of 24hrs with known on/off state of units. In this paper linear and non linear DELD with emission cost are discussed in detail. Different methods to reduce the fuel emission cost are also proposed.

IOT Enabled Home Automation and Security System

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Abstract: This paper discusses about IOT-enabled home automation system through which home security can also be achieved. The system uses Arduino UNO and ESP-32 as the main board and different kinds of sensors like a smoke detector sensor, a water level detector sensor, etc. that are required for detection and has a mobile application for remote monitoring by the user. This system consists of a smart delivery box using Wi-Fi Module, a Smart Room Lighting system, a Water level detector, and Fire Alarm Security System. The main feature of the system is the smart delivery box by which

customers can receive their parcel even if he/she is not at their home using the application on their mobile phone.

Security of digital images using hybrid approach of chaos theory and Josephus Traversal

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Abstract: In this work, a hybrid approach based on chaos theory and Josephus traversal is proposed for the security of digital images. The 1D logistic map, the 2D Hénon map, and the Josephus traversal principle are combined to form a true encrypted digital image. The chaotic streams produced by the 1D logistic map and 2D Hénon map are used in an effective way to form the two key matrices used by the Josephus traversal principle to induce the bit-level shuffling in the image. In the suggested scheme, the Josephus traversal uses distinct keys for individual pixels to scramble the bits in them, which makes the system much more unpredictable and randomized. Moreover, the streams generated by the same chaotic constructs are used to shuffle and diffuse the image at the pixel-level. The numerical and comparison results of the different quality parameters justify the strength and reliability of the proposed system. Apart from this, huge key space, entropy values close to ideal value, near 0 correlation coefficient values and satisfactory results of theoretical value tests indicate the reliability of the proposed scheme to withstand against various types of crypt-analytical attacks.

IoT based Smart Parking System

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Abstract: In the current world, with increasing population and number of vehicles, traffic congestion has become a common issue in metropolitan cities. To address this problem, IoT technology can be leveraged. This project involves the use of various IoT components, such as IR sensors to detect vehicle presence, DC motors for gate opening, Arduino UNO for system operation, and an LCD display to show available and occupied parking slots. Additionally, infrared sensors are placed at the arrival gate to detect when a vehicle has arrived and signal the Arduino to open the gate using the motor. The project also includes cloud-based slot availability information that users can access online, as well as pre- booking capabilities. Furthermore, GPS integration is proposed to provide users with information on available parking slots in nearby areas if their desired location is full. The goal of this project is to use technology to manage parking more efficiently and effectively.

User Authentication by Free-text using Deep Learning

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Abstract: With online transactions the role of cyber security has become vital. There are various tools which can provide a secure system. One of them is authenticate a user by typing rhythm which is a low cost yet complicated method. There are two ways to authenticate a user. In one way user is authenticated by the way user type username/password at the time of login also known as static authentication whereas in other way after login when user is performing his/her regular work like writing email is known as continuous authentication. Both concepts are different as in static authentication decision of authenticity is taken based on same word but different typing style while in free text dataset very few common words are there as users can type whatever they think about a given situation. In this paper the problem of continuous authentication is solved using deep learning approach.

Numerical simulation of methylammonium tin bromide-based perovskite solar cells

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Abstract: In this work, a solar cell capacitance simulator was used to investigate how the performance of a solar cell was affected by a variety of different circumstances. In order to enhance the solar cell's design, various designs and materials were experimented with using a simulator. The findings indicated that the capacitance of the solar cell was influenced by factors such as temperature, thickness, and material properties. In this study, we developed a PSC without the use of lead (Pb) which has a novel structure of FTO/ZnO/CdS/CH3NH3SnBr3/Au. Tin (Sn) is a viable alternate to Pb that can be used in the perovskite. In this study, we looked at temperature variations; perovskite's thickness and doping concentration in order to obtain better understand how they influence solar cell performance. The device is showing the optimal results at a temperature of 290K, 2000nm absorber layer thickness and 1020 cm-3 doping concentration. The lead-free CH3NH3SnBr3 has an impressive potential to be an absorber layer to achieve high efficiency (PCE: 34.76%), fill factor of 87.20%, 32.10 mA/cm2 short-circuit current (JSC) and 1.24V open circuit voltage (VOC).

Boosting Learning Disability Prediction Accuracy: A Comparative Analysis of Machine Learning Models and Hyperparameter Tuning Techniques

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Abstract: The abstract should summarize the contents of the paper in short terms, i.e. 150-250 words. This study uses SVM and KNN machine-learning algorithms to predict learning disabilities in children. The dataset includes cognitive and academic features, and model performance is evaluated using various metrics

In the first phase, an SVM model is trained and optimized using grid search. The grid search method is used to find the best combination of hyperparameters for the SVM model, resulting in improved performance. The optimized SVM model achieved a mean cross-validation score of 0.963, a high true positive rate, and a low false positive rate, with an AUC score of 0.981.

A KNN model is also trained and optimized in the second phase using grid search. The grid search method is used to find the optimal number of neighbours and distance metric for the KNN model, resulting in improved performance. The optimized KNN model achieved a mean cross-validation score of 0.919, a high true positive rate, and a low false positive rate, with an AUC score of 0.975.

Comparing the performance of the two optimized models, both models achieved high accuracy and showed good agreement between predicted and actual classifications.

In conclusion, this study shows that machine learning algorithms can predict learning disabilities in children using cognitive and academic features. Optimized SVM and KNN models achieved improved performance through hyperparameter tuning, making them useful for early detection and intervention.

Weldment Characteristics of Aluminium Matrix Composites Welded by Advanced Welding Technique: A Review

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Abstract: Aluminium matrix composites (AMCs) have gained significant attention in recent years due to their unique properties and potential applications in various industries; mainly light weight high strength

applications. Welding is a common joining process required to assemble the components made by such AMCs; but, the welding of such non-ferrous composite materials remains a challenge due to the formation of defects and intermetallic compounds during the welding process. Understanding the factors that affect the weldments of AMCs is essential to develop appropriate welding techniques and optimize the welding process parameters. The present review work is aimed to provide a comprehensive overview on the welding techniques of AMCs and highlights the importance of understanding the factors that affect the weldments of AMCs for the development of defect free high-quality weld for the high performance during their services. This review work covers the effect of reinforcement particles and welding process parameters on the weldability, microstructure, and mechanical properties of the weldments. It is found from the review work that the presence of reinforcement particles significantly affects the properties of weldment of AMCs. The type, size, and distribution of reinforcement particles also influence the formation of defects and intermetallic compounds during the welding process. The review works also identified several challenges associated with the welding of AMCs; such as formation of porosity, cracking, and the presence of intermetallic compounds. Such challenges can be overcomed by optimizing the advanced welding process and associated parameters such as welding speed, heat input, and preheating temperature. Cold Metal Transfer (CMT) welding is a relatively new and promising advanced welding technique for AMCs that can overcome the limitations of traditional welding techniques.

Optimizing Decision Tree Classifier for Multi-Class Classification in Bank Dataset for Improving the Performance Metrics

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Abstract: A variety of Machine Learning Classification techniques are introduced to classify the data. The performance and accuracy score of these algorithms may vary. A comparative study of these algorithms is required to determine the relevant approach for a given domain. In this paper, a study is focused on one classification method, namely the Decision Tree Classifier (DTC) for multi-class classification. To properly apply the classifier to the dataset, a pre-processing step was performed and the balanced dataset contains 1, 79,721 records and 44 attributes. The Principal Component Analysis (PCA), a dimensionality reduction method is applied. With PCA and without PCA, comparative studies are conducted. The experimental results show that the DT classifier performs better without the dimensionality reduction technique PCA using this balanced dataset. Moreover, the study

was also conducted on the Hyperparameter Tuning method used in the DT classifier to improve the performance metrics. The DTC classify the given customer dataset into three category – Good, Medium, and Bad, according to the credit information. Besides, we evaluate and compare each accuracy and performance of the algorithm with a Hyperparameter and not. In the classification reports, the performance of the algorithm has been calculated in terms of accuracy, precision, recall, F-measure, and Kappa score. The analysis is concluded by optimizing the decision tree classifier by GridSearchCV Hyperparameter tuning technique and performed with the best accuracy (99%), the best criterion is entropy and the max-depth is 40.

Impact of FSW tool and process parameters on Aluminium 5083 and 6082 Alloys

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Abstract: Aluminum 5083 alloy is extensively used for naval applications due to its high opposition to ocean water and the aluminium 6082 alloy is a structural material has incredible applications in construction industry. The welding of these two dissimilar alloys is a little tough in the arc welding process due to welding defects. In the present work two cases are discussed about joining these dissimilar alloys via FSW process. In the first case total 31 trials conducted by 5 different tool pin profiles and in the second case, 20 trails conducted with single profiled tool. For both the cases response surface methodology is used and ANOVA test is performed to check the model adequacy. The tensile properties are found better when taper square tool pin profile of 18 mm shoulder diameter is used at tool rotational speed of 1000 rpm and welding speed of 90 mm/min.

Waste heat recovery potential of VCR engine: Alcohol-Diesel blend

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Abstract: Today's modern life heavily relies on Internal Combustion Engines in which only 30% of fuel energy is converted to useful work and rest is wasted due to metallurgical conditions, thermodynamic limitations and parasitic loads. Since oil crisis researchers has been investigating to add renewability to the petroleum-based diesel in order to reduce emission and increase performance of the fuel. In many research work it is found that blending of diesel with alcohol improved the emission characteristics but the performance

of blend is still at lower end. In this experimental work diesel is blended separately with 12% v/v of ethanol and 12%v/v butanol fed to stationary variable compression ratio (VCR) engine at different loading conditions. Exhaust gas heat and heat from cylinder water jacket is analysis for these blends and a double pipe parallel flow heat exchanger is used to recover heat from the exhaust gas. Exhaust gas heat contain increases with increase in loading. Heat recovered from exhaust varies from 12% - 11.39%, 11.8% - 9.6% and 11.83% - 9.4% from lower to higher loads for pure diesel, 12% v/v ethanol in diesel and 12% v/v butanol in diesel respectively. Although heat available at exhaust increases as load increases but effectiveness of the heat exchanger is reduced.

Evaluation of Free Radical-Scavenging and Nitric Oxide Inhibition Activities of Selected Medicinal Plants

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Abstract: The pharmaceutical industry is becoming dependent on plants with medicinal value because of their roles in the prevention and treatment of disease. Ten medicinal plant species namely Phyllanthus embelica, Mentha piperita, Ocimum tenuiflorum, Azadirachta indica, Syzgium aromaticum, Dalbergia sissoo, Allium sativum, Psidium guajava, Syzygium cumini and Allium cepa were evaluated for antioxidant potential using spectrophotometric assays. The results indicated that hyroalcoholic extracts of M. piperita showed the highest antioxidant capacity (202.56 ± 1.98 µgAAE/g) and DPPH radical scavenging activity (94% with IC50 value of 561 ± 1.13 µg /mL). Also, the extract of O. tenuiflorum showed 89 % inhibition at 1000 µg/mL concentration. The presence of phenolic and flavonoid compounds may be responsible for the free radical scavenging and antioxidant properties. The findings of the present study suggest that the plants might be exploited as a source of natural antioxidants. Further investigation is still required to identify the phytochemicals responsible for medicinal properties and to understand the mechanism of action of isolated bioactive compounds.

A Two Stage Image Denoising Using Superpixel Algorithm

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Abstract: Most denoising algorithms presently lack the capability to differentiate between pixels that contain noise and those that do not. However, these algorithms still utilize uniform rules when processing all pixels. Denoising techniques often lead to the loss of original image information when applied to images with fine details or low contrast between the subject and the background. To overcome the aforementioned drawbacks, the paper proposes a two-stage image denoising algorithm that incorporates noise localization. In the initial stage, thresholds T'1 and T'2 are derived from the distribution of gray values in the image. To achieve denoising, the method involves two stages. Initially, edge extraction is applied to preserve the edge information, followed using singular value decomposition to obtain the singular value matrix from the resulting edgeless grayscale image. Finally, the singular value matrix is compressed using a percentage threshold η. To enhance image denoising, the proposed algorithm involves a two - stage approach. In the first stage, thresholds T'1 and T'2 are derived by analyzing the distribution of gray values in the image. In the second stage, the image edge information is extracted and stored using edge extraction to create an edgeless grayscale image. Singular value decomposition is then applied to the edgeless image to obtain the singular value matrix, which is subsequently compressed using a percentage threshold η for effective denoising. To perform coarse noise filtering, the proposed approach employs inverse matrix decomposition. Moreover, the algorithm utilizes adaptive thresholds T1 and T2, which are obtained from the image histogram. The image is categorized into three regions, namely "Dark Area," "Gray Area," and "Light Area" based on these thresholds. The final step in the proposed approach involves merging the denoised image with the image edges to produce the output. A comparative analysis of the proposed algorithm is performed by examining the peak signal-to-noise ratio (PSNR), Structural Similarity Index and Image Enhancement Factor against other state-of-the-art denoising algorithms. The results demonstrate that the proposed algorithm is more effective in denoising various images.

State of The Art Techniques for Increasing the Quality of Concrete Made With Recycled Aggregate

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Abstract: The concrete made with recycled aggregate (RA) differs from normal concrete which made with natural aggregate (NA). RA surfaces are typically surrounded by hardened residual/adhered mortar, which can result in high porosity and a high capacity for water absorption (WA), both of which have a negative impact on mechanical properties and durability of concrete made with RA. Two major approaches can be adopted for improving RA quality, the first approach is removing the residual/attached mortar from RA and the second approach is strengthening of the RA. This study reviews major publications that describe the methods, techniques used worldwide such as carbonation, self-healing, coating, reactive nanoparticle materials, and adding mineral admixtures to the RA to overcome the problems associated with RA in producing concrete and to achieve acceptable quality of recycled concrete aggregate (RCA) compared to that made with NA. It also tackles the benefits, and limitations of the used techniques. The study's main finding indicates that carbonation conduction is the most efficient and practical technique to improve the mechanical properties and durability of concrete made with RA. Moreover, researchers mentioned that carbonation curing has a positive impact on RCA and that its WA reduced by about 30%, apparent density (AD) increased by about 5%, and aggregate crushing value (ACV) dropped by about 10%, compared with uncarbonated RCA.

Green synthesis of Copper Oxide nanoparticles from Rudraksha extract for photocatalytic degradation of Methylene Blue under sunlight

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Abstract: Copper oxide nanoparticles (NPs) with an average particle size of 20 nm, were synthesized from Rudraksha extract through a simple green method. The photocatalytic property samples were studied in the degradation

of Methylene Blue (MB) dye under sunlight. Promising results were obtained 60 % degradation in 120 minutes, with the rate of degradation 0.05239 m-1. The observed degradation can be attributed to the process of photosensitization. It was concluded that the Rudraksha extract acts as an excellent reducing as well as capping agent and thus aids in the synthesis of NPs.

Notes and Password Manager

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Abstract: With the continuous development of the electronic industry, mobile phones are also developing towards convenient and intelligent direction. The system of mobile devices is constantly expanding, and Android has certain advantages over the system of wire transmission. In this paper, the architecture of The Android platform and the composition and working mechanism of Android applications are first described. Android to ensure easy decision making by considering various factors of security like key functions, storage, credentials, and manage factors like authentication and system and also designed graph to provide functionalities like ratio, user suggestion and friendly featured based on daily activities. Taking a note is the process of capturing information in a source or event. Many apps have their own unique features, storage, editing, and sharing capabilities, and so on. Notes app allow users to save all the notes and information. Users can also add the notes and attach activities to their notes to enrich the description and context. A completely native app, using the latest features of the Android platform to provide the best user experience. These applications provide users the option to store all of their notes and data as well as add further notes or tasks to their existing notes to improve their explanatory and situational context. Managing account very securely our app consists of password authentication with system generated along with the account credits like email id and password. The Android Notes and Password Manager app is a Java-built program created especially for the Android platform. It uses the most modern Android platform features because it is an entirely native application, ensuring the best possible user experience. This program may be used, among other things, to archive important notes, everyday tasks, and images.

Emojify Facial Expression Detection using Deep Learning

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Abstract: Automatic facial recognition is a challenging new quest in emotion recognition. This design extends the deep convolutional neural network (CNN) approach to facial expression recognition tasks. This task is accomplished using the facts of facial action units (AU) as part of the facial motion coding system 'FACS'. Represents deadly emotions. For fully connected CNN layers, a regularization system called 'Powerhouse' proved to be very effective in reducing overfitting. CNN networks then help extract features from the input images or videos, resulting in triggering events after recycling in deeply connected networks. This design uses the extended FER2013 dataset collected for facial expression recognition experiments. System performance achieves an average sensitivity rating of 88. The system successfully classified seven introductory emotion classes. Therefore, the proposed system is proven effective for emotion recognition.

A Novel on Performance Analysis of Proton Exchange Membrane Fuel Cell System with Metaheuristic Optimization based MPPT Controller

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Abstract: At present, all over the world, the automotive manufacturing industries are utilizing the fuel cell methodologies for supplying the energy to the electrical machines for continuous running of Electric Vehicles (EV) at various operating temperature conditions. Basically, the fuel stacks are combined with the battery management system for running the EV without any shortage of electrical power. The fuel cell generated voltage is very less when equalized with the current. Also, the fuel stack produces nonlinear characteristics. So, the finding of working point of the fuel stack on V-I curve, and its extraction of peak power from the fuel stack are quite difficult. In this article, a metaheuristic optimization related Maximum Power Point Tracking (MPPT) methods are applied to trace the Maximum Power Point (MPP) of the fuel stack system with low steady state oscillations. The metaheuristic adaptive Cuckoo Search Controller, plus Perturb & Observe-Particle Swarm Optimization (P&O-PSO) controllers are compared in terms of working efficiency, tracing time of MPP, dependency on fuel cell design, converter output voltage distortions, plus settling time of MPP. Also, a three-phase power converter is integrated with the fuel cell for enhancing the source

voltage of the system. The merits of proposed DC-DC device are good voltage conversion ratio, more efficient, and easy design.

Remote Sensing Scene Classification using Convolutional Neural Network

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Abstract: Several sectors can benefit from the use of remote sensing picture scene classification, which strives to classify remote sensing images into a number of semantic categories depending on their content. Deep learning-based remote sensing image scene categorization has generated a lot of attention and achieved significant strides as a result of these networks' strong feature learning skills. To the best of our knowledge, there hasn't been a comprehensive analysis of recent deep learning advances for scene classification in remote sensing images. This process provides a thorough evaluation of deep learning algorithms for remote sensing picture scene classification, which is crucial given the field's rapid progress. The remote sensing scene is analyzed using the deep learning algorithm from the input remote sensing photographs, and then the deep learning method is utilized. After all of the images have been trained, the deep learning technique predicts the outcome using accuracy, precision, recall, and F1-score.

Review of thermal spray coatings perform in protecting boiler steels against corrosion at high temperatures

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Abstract: Failure of boilers can cause huge economic loss to the power plants. In high temperature and aggressive working conditions erosion, hot corrosion and abrasions are most responsible factors for failure of boiler steels. Thermal spray coatings are the preferable method to minimize the cause of failures of the boiler steels due to these problems. Among different thermal spray techniques. By utilizing the HVOF process, it is possible to produce coatings with high micro-hardness and low porosity, making it an advanced and effective method that is currently undergoing rapid development. In this paper a review study regarding the performance of thermal spray coatings deposited on boiler steels against the hot corrosion has been presented. The outcomes of this research have the potential to assist in identifying the optimal coating combination and application technique to prevent the deterioration of boiler steels.

Navigation Stick for the Visually Impaired

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Abstract: The Smart Blind Stick is an assistive device for the visually impaired that can identify adjacent objects and audibly describe them. The consequence is less effort for individuals and a heightened awareness of the environment. Moreover, it helps the visually impaired to navigate autonomously. In senior living homes where individuals may have difficulty performing basic tasks due to impaired vision, this device may be of tremendous assistance. The purpose of this setup is to allow visually impaired individuals to "see" their surroundings. The primary role of the system is to detect and categories items in photos captured by the stick-mounted, and then communicate this information audibly or visually to the user. We have GPS assistance for the visually handicapped. This project aims to enable a visually impaired person to receive audio messages using radio frequency (RF) communication that describe the user's current location and surrounding area. The device has a unique attachment that may be utilized in any environment due to its voice navigation system and advanced RF connectivity. This project has been created to aid the visually handicapped in navigating metropolitan streets without falling. A microcontroller and an output buzzer work together in this system to alert the right persons. Three ultrasonic sensors and one infrared sensor are included in the system. The device is equipped with an LED light that alerts people to the blind person's presence at night and guides them along their walking path.

Deep Learning-Based Detection of Leaf Diseases for Sustainable Agriculture

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Abstract: In India's economy, agriculture is essential. Early identification of plant illnesses is essential to preventing crop loss and further disease propagation. The majority of plants, including apple, tomato, cherry, and grapes etc. exhibit apparent disease symptoms on the leaf. To accurately forecast the disease and take proactive steps to prevent it, these obvious patterns can be found. By utilising machine learning techniques and deep learning techniques, this can be avoided. We therefore provide a technique for identifying a plant's disease using photographs of its leaves. Convolutional Neural Network methods and machine learning approaches are used in this instance to carry out the operation (Convolutional Neural Network). Once the

algorithms have trained the dataset, the accuracy of algorithms is compared and the images are classified.

Camera Vision Based Garbage Categorization and Detection

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Abstract: A piece of trash is a leftover item that is no longer useful. Typically, it was the outcome of some process, whether it was caused by human action or a natural environment. There are many different categories for trash, and organic and non-organic debris is one of them. Organic refuse is a leftover substance from a natural process or another process that an organism can break down quickly. Leafage and animal remains are frequently preferred by the organic debris. Non-organic waste, on the other hand, is hardly ever broken down by the body. Similar to plastic, bottles, glass, iron, and many other materials. Recycling is essential for a society that is sustainable because it reduces the quantity of waste. However, the present recycling procedure necessitates that recycling centres separate garbage by hand and employ a series of large filters to separate more defined objects. Thus, trash classification is another promising application of computer vision can also be used in industry, which has attracted a lot of research attention in recent years. This will have advantageous economic benefits in addition to favourable environmental effects. In this paper, a deep learning-based garbage categorization and detection system based on camera vision is suggested.

Smart Glasses for Blinds using Arduino

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Abstract: A pair of glasses, an obstacle detection module that is mounted in the middle, a GPS module, a processing unit, an output device—a buzzer component—and a rechargeable battery are all included in this gadget. The core processing unit is powered by the rechargeable battery. The identification of obstacles module basically consists of three ultrasonic sensors, processing unit consist of an Arduino module and the output unit consists of a buzzer. The Arduino module operates the ultrasonic sensors, gathers data about the barrier in front of the blind guy, analyses the data, and then outputs the appropriate output through the buzzer. The GPS module basically used for the sharing of the live location of the blind man to their relatives or the concerned person, and also it alerts for the emergency after using the alert button by the blind man.

These ultrasonic Arduino based smart glasses for blind people is a portable device, easily usable, light weighted, user friendly, GPS tracker and cheaper

in price. The blind could navigate and avoid hazards with the aid of these spectacles.

Nanocellulose for Biomedical Applications: A Review

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Abstract: Cellulose is a natural biopolymer composed of nanofibrils with a high specific surface area. It can be found in plants, bacteria, and tunicates and is valued for its low cost, low density, and excellent mechanical properties. Additionally, cellulose is non-toxic, biocompatible, and highly chemically stable, making it an ideal material for use in biomedical applications. Recent research has focused on the nanoscale manipulation of cellulose, resulting in the production of nanocellulose with outstanding physicochemical properties. This has led to the emergence of cellulose nanocomposites as a promising field of study, with potential applications in various biomedical areas including wound healing, bone tissue engineering, 3D printing, medical implants, and drug carriers. This review article aims to discuss the latest developments in the production of cellulose nanocomposites and their potential biomedical applications.

Modelling and Evaluation of Ride Sharing using Machine Learning and Desirable Algorithms.

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Abstract: Ride sharing is the practice of one way transportation followed by many leading automobile companies like Uber and Lyft that helps provide a faster, cost effective and enhanced ride experience to users. This app is built based on machine language and the Dijkstra's Algorithm which uses a greedy approach to find the shortest path between any two nodes and coinciding path riders are informed about their potential to captivate a ride share. Reach-based routing and A* algorithm are also other shortest path algorithm. Ride matching is another heuristic approach to extend the feasibility of dynamic ride sharing experience. We can use the maximum-weight bipartite matching algorithm initially is based on one-driver, one-rider but can be extended to multiple rider, one driver by ignoring individual preferences and just taking the routes into consideration using Inverted Index Data Structure. The implementation part requires an automated matching algorithm that checks whether a driver can take a passenger with him without violating the maximum detour constraint he has set.

The optimised solution to the ride sharing includes real time request matching, cost and fuel conservation and a dynamic ride.

Short-Term Electrical Load Forecasting using ARIMA and LSTM

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Abstract: Electricity itself cannot be stored. It is usually generated whenever there is a demand for it. It is therefore useful for electrical power suppliers to know the load demand in advance. The estimation of electrical load in advance is called load forecasting. This is used by the power suppliers to predict the amount of electrical energy required to maintain the equilibrium between supply and load demand. Load forecasting is an essential part of the electrical industry and power planning. This paper proposes a weather compensating method of load forecasting using Linear Regression (LR), Support Vector Machine (SVM), Multilayer Perceptron (MLP), Long Short-Term Memory (LSTM) and Autoregressive Integrated Moving Average (ARIMA) model, evaluate and compare their performance. The results indicate that the ARIMA model fared the best among them with the highest accuracy and lowest RMSE.

Dynamic Programming for Optimized Hybrid Data Compression using Huffman Coding and Lempel-Ziv-Welch Algorithm

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Abstract: Data compression is a critical technique that reduces the size of digital data to save storage space and transmission time. Advanced compression algorithms like Huffman coding and Lempel-Ziv-Welch (LZW) algorithms have been developed to achieve high compression ratios. In this paper, we propose a data compression algorithm that uses Huffman coding and the LZW algorithm to compress images and show how the result is better than when used individually.

Firstly, we use Huffman coding to convert the image into pixels to identify repeated patterns in the image. We then use the LZW algorithm to further compress the image by replacing repeated patterns with shorter codes. We also use dynamic programming techniques to optimize the algorithm and make it more efficient.

Experimental results are presented to evaluate the performance of the proposed algorithm on different types of images. Our results show that the

proposed algorithm achieves higher compression ratios than traditional algorithms. Additionally, our algorithm is efficient in both encoding and decoding, making it suitable for real-world applications.

In conclusion, the proposed data compression algorithm that uses both Huffman coding and the LZW algorithm effectively compresses digital images. The use of dynamic programming techniques has significantly improved the efficiency of the algorithm. This algorithm can be useful in various applications, including storing and transmitting large images.

Intelligent Prediction of Quality of Water using Machine Learning

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Abstract: Numerous people today are afflicted with dangerous diseases brought on by polluted water. One of the humanity's most grave concerns is the declining quality of the lakes, streams, and estuaries that make up nature's water supplies. Unclean water has a wide range of impacts that touch every element of life. Therefore, water resource management is extremely important for enhancing water quality. In this study we are going to classify the water in to two classes safe and not safe this can be done by using machine learning models. If data are analysed and water quality predictions are made in advance, it will be possible to effectively address the effects of water contamination. This issue has been the subject of numerous previous studies however, the current water quality management methods still require improvement in terms of their effectiveness, dependability, accuracy, and usability.

A Comprehensive Review on the Recent Advances in Heat Exchanger Efficiency Enhancement

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Abstract: Recently, heat exchangers plays a vital role in the functioning of diary, thermal plants, food processing industries, chemical and food processing industries. However, to effectively increase the thermal performance of heat exchangers is still a crucial issue in modern industries. Hence, in this paper, different types of heat exchangers are explained.

Further, various efficiency enhancement techniques (enhanced surfaces, finning, tubes inserts, baffles, types of fluids used etc.) that are employed in heat exchangers are discussed. Thereafter, the results of various researchers working in the field of heat exchanger efficiency enhancement are summarized. Thus, this review articles will be useful for the researchers to strengthen their understanding regarding the flow characteristics and heat transfer mechanism of the heat exchangers. Hence, this paper provides some references for distinct heat exchangers in diverse industrial applications.

A Comprehensive Review on Noma-Based Backscattered Communication In 5G Architecture

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Abstract: The explosive development and use of smart devices such as smartphones, portable devices, sensor systems, and effectors in Internet-based applications such as HD video transmitting, streaming live, mixed reality, real-time video calling, virtual reality, and live presentations, as well as social media services, produces big information traffic. The need for ultra-low-power wireless communication paradigms arose from the vast and pervasive deployment of devices in 5G and later wireless networks. As a result, we provide an exhaustive literature analysis that covers the principles, problems, and ongoing research activities in the field of NOMA-BCs. In this study, we investigate the notion of using non-orthogonal multiple access (NOMA), a strategy for future radio access for 5G. According to the findings, the DBBC method greatly boosted throughput by 83%, which is the highest gain of any method when compared to others.

Sensor Based Gas Leakage Detection with an Alert and Control System

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Abstract: LPG (liquefied petroleum gas) is a cleaner energy source compared to firewood and charcoal, so it is a major fuel source, especially in urban areas. Gas leakage is a major problem as it not only causes material loss but also human injuries. More and more people have died due to gas leaks. In order to avoid serious accidents caused by gas leaks, gas leak detection and alarm systems should be installed in vulnerable areas. The purpose of this document is to create and implement a system that can automatically warn and control gas leaks. The system uses the MQ2 gas sensor to detect gas, and it will immediately open the door automatically using servo motor to reduce concentration of gas accumulated at that place and for exit of people. In addition to this the buzzer will ring an alarm to alert people around that area.

Corrosion-resistant nanostructured superhydrophobic coating for Mg alloys: Rudiments, mechanism, and recent advances

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Abstract: Due to their superior properties, magnesium (Mg) and its alloys are widely used in many industrial applications, but corrosion limits their use. The degradation due to corrosion can be minimized using multifunctional water-repellent coating i.e., superhydrophobic coating (SHC). Many scientists and industrialists are working on fabricating such coating to get the desired product by optimizing many parameters like types, size, the concentration of nanoparticles, time of reaction, temperature, and the methods used to develop it. This paper reviewed the current research status to provide a clue or thought for beginning researchers to understand how corrosion is dangerous to Mg alloys and SHC can be a potential solution to overcome the corrosion problems. The rudiments of SHS with its wetting models and recent progresses in the fabrication of SHC for Mg alloys are discussed.

XGBoost classifier and feature selection method using Breast Cancer Detection

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Abstract: Breast cancer is one of the most prevalent malignancies in women, and if detected early enough, it can be efficiently treated. Early diagnosis and classification of breast cancer might enable patients to receive the right care. In emerging and underdeveloped nations, breast cancer is one of the main causes of death for women. In this paper, Breast detection system is implemented in four stages pre-processing, feature extraction, feature selection and classification. This article presents a framework called XGBoost classifier that uses the transfer learning and feature selection to detect and categories breast cancer in mammogram. The proposed system uses VGG-16 to extract features from images, which are then fed into a fully connected layer for classification of benign and cancerous cells. Experiments on typical DDSM data sets are carried out to assess the performance of the proposed framework. This classification is a successful effort that uses feature extraction and selection to effectively detection.

Energy Evaluation and Performance using time depended Fuzzy Logic Base Algorithm in Distributed Computing 5G Networks

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Abstract: Today's, computer world of networks is an essential and emerging area of global research in wired or wireless networks have the challenges of networks. In Use of various computer network platforms like cloud computing, high-performance computing, parallel, and distributed computing. The attractive technology for their wide range of applications in enterprises, defence, and software industries, energy consumption (i.e. carbon footprint CO_2) is a major issue in the wire or wireless computer networks. So, affecting the operation of networks for unbalance energy and low energy consumption distribution of distributed computing networks. Here, we proposed the time dependent algorithm of energy-efficient and routing algorithm by fuzzy-based model for energy optimization in distributed systems. The efficient and shortest path routing algorithms are used to gain quality of services (QoS).

Distinguishing Identical Twins using Face Recognition

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Abstract: Due to the extreme resemblance that two identical twins have, recognizing twins has become one of the most challenging tasks in recent years. Using a dependable biometric identification system, identical twins should be distinguished. Due to the great degree of facial likeness between identical twins, complex facial recognition techniques are required. This study highlights the aforementioned issue and offers an Ensemble model-based method for locating identical twins. 20 pairs of twin-free licensed images have been collected from google and are processed. The collected dataset is used for differentiating identical twins. In this study, an ensemble learning approach using VGGFace, FaceNet, and DeepFace models is proposed to improve the accuracy of identifying identical twins. The proposed approach has ability in various domains, such as security, surveillance, and biometric identification, where accurate recognition of identical twins is essential. The algorithms were quite effective in identifying identical twins. The proposed system combines the predictions of the three models and uses a voting mechanism to make their final decision and has resulted in the highest accuracy of 95.02%. This work provides satisfying results by combining the

predictions of multiple models and can improve the accuracy of the classification and reduce the misidentification of identical twins.

Polymer Nanocomposite for Energy Storage Applications

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Abstract: Polymer nanocomposites (PNCs) are used widely as of their tremendous and assuring properties such as fine electrical insulator, high capacitance, heat resistance, corrosion resistance etc. PNCs are used in significant range of implementations such as electromagnetic absorption, transportation, energy storage, thermal flow control and novel catalysts etc. This review paper. basically, providing information about the applications of Polymer Nanocomposites in energy storage devices such as, lithium-ion, lithium-sulfur batteries and lithium-oxygen super capacitors, fuel cells, use of nano-composites in various components (electrodes, separator and electrolytes) of batteries, capacitors etc. Implementation of polymers in these devices, limits the properties to the great extent.

What is the mechanism of energy storage in batteries and supercapacitors. Discussion over conducting polymer material which helps in enhancing the properties of energy storage devices, such as polypyrrole (PPy), polythiophene (PTh), and polyaniline (PANi), G-PEDOT, carbon nanotubes, quantum dots etc. If material is not good enough to provide sufficient results than it can be treated with other material by using nanotechnology like coating of carbon, nanotubes, graphene oxide etc. These applications of PNCs reduce the problem of high demand of energy with increased population. Applications are followed by current challenges and future prospective.

Hand Gesture Vocalizer

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Abstract: Deaf and dumb individuals often face significant challenges when it comes to communication, particularly in regards to expressing their thoughts and opinions about everyday customs and activities. This is often due to the fact that sign language and conventions can be difficult to understand for individuals who do not know how to interpret them. Sign language relies heavily on non-verbal behaviours and hand gestures, which must be combined in a specific way to convey the intended message. This can involve a complex interplay of hand shapes, orientation, and movements, as well as facial expressions and body language.

This project aims to break down the communication barriers faced by the deaf and dumb community by developing a wearable device that can translate sign language into verbal communication. The device, in the form of an electronic glove, is equipped with flex sensors on each finger, which detects hand gestures and sign conventions. These gestures are then translated into speech or voice output, allowing for easy communication with the general public.

The ability to communicate is fundamental to human interaction, and this project aims to empower deaf and dumb individuals to express their thoughts and opinions through real-time gesture-based processing.

People communicate their thoughts and opinions to those around them through interactions with one another. However, deaf and dumb people may not always experience this. Deaf and dumb people can now communicate thanks to sign language. Without the use of acoustic sounds, a deaf and dumb person can communicate verbally using signal language.

Implementation of an Intelligent Controller for Optimal Location and Sizing of DGs in a Radial Distribution System

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Abstract: This paper portrays a methodology for ideal locational analysis and disposition of decentralized DGs in a decentralized system of radial distribution. Optimal sizing and location include deciding the most appropriate node in the considered test system where the DG is to be situated. Among the several efficiency parameters considered for optimal distribution system re-outlining such as voltage profiling, reduction of losses considering the reactive and real power between each bus is the crucial one. for as much as to the distinctive characteristics of the system of distribution, a convenient randomized and stochastic algorithm for ideal locational analysis and deciding the size of DGs in Radial Distribution System (RDS) is used to enhance the overall load quality specifically Particle Swarm Optimization (PSO) and a subtle contrast with algorithms that are genetically performed are prompted in the following research article. The scenario distinctively deals with decreasing overall losses, enhancing voltage profile, and enhancing system efficiency. The validation is provided by showcasing contrasting analyses between the 33 and 69 test bus system of IEEE standards. The performance parameters are also estimated using a fuzzy logic controller (FLC). The DGs in RDS is ideally redesigned using the tendered methodology and the observations and conclusions in the form of simulation are portrayed. The performance parameters are found to be better with FLC in comparison to another method.

A review of hybrid micro-machining: State of art approach

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Abstract: In recent years, hybrid micromachining has attracted the attention of many researchers with the aim of exploiting multiple micromachining processes. Hybrid micromachining has proven to be an effective method of creating micro-features in advanced components, minimizing the drawbacks of applying individual machining processes separately. Hybrid micromachining processes can produce micro parts with high levels of precision and repeatability in virtually any possible material. These micro components/products are usually made up of several materials like difficult-to-machine materials with complex geometries and microstructures that require sub-micron machining accuracy. Therefore, a series of micro fabrication processes are required to provide such products. This paper presents a recent review of hybrid micromachining processes that integrate various micromachining processes to improve machinability, geometric accuracy, tool life, surface integrity, machining speed, and process force reduction. The paper reviews recent development in hybrid micro-machining processes which involve several case studies for integrating hybrid micromachining with other micromachining and ancillary technologies are also presented. The concepts of hybrid tools for coaxial and simultaneous application of electrochemical and laser micromachining processes, experimental analysis of process parameters using genetic algorithms, and analytical modeling of hybrid micromachining are discussed. Future possibilities and potential developments in the field of hybrid micromachining processes are also discussed.

Optimization of MANET Routing Protocol using Radial Basis Functions (RBF)

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Abstract: Mobile ad hoc networks (MANETs) have no need for traditional communication infrastructure, such as cell towers. Additionally, each node operates autonomously and connects to others in its own network. Any collection of nodes that can communicate with each other over a wireless medium forms a network. The main problems with mobile ad hoc networks are its poor service quality, its deteriorating network reliability, and its inefficient use of energy. Here, we focus on the problem of optimizing routing in MANETs via Radial Basis Function.

Effect of Quaternary Blend Cement on fresh properties of High-Performance Concrete

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Abstract: Several attempts have been made to find a replacement for cement because of the many negative effects it has on the environment. In this regard, the international scientific community has identified various supplementary cementitious materials (SCMs), as a suitable alternative to cement in the construction of concrete. This investigation was also made to see how a quaternary blend of SCMs would affect the high-performance concrete's fresh qualities. In this regard, the conventional cement in the HPC was replaced with three different SCMs i.e., granulated blast furnace slag (GBFS) along with Nano-silica and fly ash (FA). Utilizing the Design Expert Software's Box-Behnken Design (BBD) and response surface methodology tools, the entire experimental protocol was created. At optimized conditions i.e., % dosage of GBFS, FA, and NS = 0.93, 0.54, and 0.97, the values of fresh properties were, workability = 0.96, fresh density = 3224.51, settling time-initial = 13.61 min, settling time-final = 354.92 min, bleeding percentage = 3.04% and plastic shrinkage = 20.29. Hence, the replacement of cement with the SCMs may not only improve the properties of the HPC but also reduce the carbon footprint of concrete structures.

Mapping Vulnerable Areas for Saltwater Intrusion Using GALDIT Framework

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Abstract: Around the world, coastal communities deal with a variety of issues, such as contaminated drinking water, less yields from agriculture caused by poor soil quality, damage to delicate coastal ecosystems, and infrastructure deterioration from corrosion that weakens its operation. Detrimental groundwater exploitation, climate change, and geological formations that may create a hydraulic gradient allowing high density sea water to migrate to the land, a phenomenon known as saltwater intrusion, are all contributing factors. Numerous regions, particularly those close to the shore, could be affected by saltwater intrusion into their aquifers. It is essential to recognize these areas. This study uses the GALDIT model, a framework primarily used in assessing coastal aquifer vulnerability, to identify vulnerable areas in Harris County. It generates a cumulative vulnerability index by using weighting schemes and scoring criteria, by using a combination of quantitative and qualitative param- eters, namely Groundwater occurrence [G], Hydraulic conductivity of aquifer [A], Depth to

groundwater above MSL in m [L], Distance from the shore [D], Impact of existing status of intrusion [I], and the Thickness of aquifer [T].

High-risk areas have been found in areas with high hydraulic conductivity, shallow groundwater depths, proximity to the shoreline, areas that are more vulnerable to intrusion, and regions with thick aquifers. We found that the regions close to Clear Lake, Carpenters Bayou, Tabbs, and Galveston Bay, spanning along the Woodlands-Sugar land metropolitan area, were the most susceptible to saltwater intrusion. These regions had a surface area of about 2510 sq.km. The research results emphasize the crucial need of identifying vulnerable locations based on hydro-geological factors and putting into practice workable solutions to lower risks to the affected community, foster crisis management, and boost community resilience.

An Intelligent Approach for placement of Optimal Capacitor in Radial Distribution System

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Abstract: The correct placement and physical size of capacitors in a radial network of distribution are essential to minimizing energy losses and improving the bus voltage. The appropriate location and sizing of capacitors in radial distribution networks are addressed in this research using a unique methodology. The strategy combines the Loss Sensitivity Index (LSI) and Particle Swarm Optimization (PSO) algorithms, two optimization methodologies. The PSO approach is employed to choose the best positioning and sizing of capacitors based on the minimizing of energy losses and capacitor cost. The LSI algorithm uses two Loss Sensitivity Indices (LSIs) to identify the most acceptable candidate bus or places for the candidate capacitors. The backward/forward sweep methodology is employed to estimate load flow, and the IEEE 33 bus system is applied to the suggested method. The studies indicate that the recommended strategy performs effectively in terms of diminishing power losses and enhancing voltage profile. Planners of distribution networks can utilize the method as a useful tool to create cost- and time-effective placement and sizing plans for capacitors.

A Brief Study and Analysis of Various Sustainable Energy Resources for Its Efficiency

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Abstract: sustainable energy as to shape the present for securing the future leads with the implementation of renewable energy resources. Not only domestic as well as commercial and industrial acceptance meets the demand. The renewable energy resource can be the leading power generation in country as well as in the whole world. With the availability, efficacy and uses it fits well in each direction and every prospectus of sustainable development. This article also includes the system infrastructure which also possess system methods and load capacity & generation of the proposed entire network. It may also includes the economical consideration and obstruction faced by the overall system. The efficiency approach of the system performance has been estimated. The future scope of the proposed topic have been discussed in terms of implementation of the government policies and various topologies. The energy crisis in the system may take a great direction and is only manageable by renewable energy source integration in power production.

Investigating the Mechanical Properties of Sisal/Areca/Sisal Natural Fiber Reinforced Composite Material Treated with NaOH and Filled with Al_2O_3 and TiO_2

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Abstract: The primary objective of the research is to study how NaOH treatment and fillers of Al2O3 and TiO2 affect the mechanical properties of a composite material based on Sisal-Areca fibers. The composites are made using a hand layup technique, where Composition 1 consists of untreated raw fiber (USAS), Composition 2 is fiber treated with NaOH (SAS), Composition 3 contains fiber with Al2O3 fillers (SASAL), and Composition 4 has TiO2 fillers (SASTI). The standards followed for testing include tensile testing (ASTM 638), flexural testing (ASTM 570), impact testing (ASTM 256), density measurement (ASTM 792), and hardness testing (ASTM D2240). The addition of Al2O3 and TiO2 fillers improves the tensile strength of the material by 8.6% and 11.09%, respectively. The fillers of Al2O3 improve the flexural strength by 54%, and TiO2 enhances it by 66.83%. Furthermore, the impact strength is improved by up to 57.2% for Al2O3 fillers and 67.28% for the addition of TiO2 fillers.

The addition of fillers enhances the mechanical properties of the material with an increase in density.

Speed Limit Indicator

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Abstract: Driving on a road where the environment is dynamically complex can pose a challenge for most vehicle users. Hence, rules and regulations had been written down for ease of traffic and safety purposes. However, with eight billion people on Earth, altercations on traversing related issues are very common despite strict regulations. Speed management plays an important role in improving road safety. The speed limit was created to balance both travel efficiency and safety, yet driving under the influence, overspeeding, and rash driving are the leading causes of most road accidents today. A lot of overzealous youth draw a thrill from overspeeding and breaking the laws at the cost of strangers' lives. These accidents disturb not only human society but also the environment and its surroundings. This research paper presents the design and implementation of a speed limit alert system using Arduino technology. This device alerts the driver when the vehicle crosses the speed limit. However, if the vehicle continues to cross the limit for a continuous period of time, a ticket is sent along with its vehicle number to the nearby traffic patrol station. The paper provides an overview of the different types of components used in the device, such as an ultrasonic sensor, a piezoelectric buzzer, and a microcontroller. The results showed that the device was accurately able to detect when the speedometer crossed the set speed limit, as a result of which the buzzer had been activated.

Effect of Micro and Nano Reinforcement Materials on Mechanical Properties of Aluminum Matrix Composites: A Comprehensive Review

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Abstract: The present review work is aimed toward comparatively study the effect of reinforcement particle size (micro and nano-size) on the mechanical properties of Aluminium matrix composites (AMCs). The review work also focused on the effect of fabrication process routes and their corresponding process parameters on the mechanical properties of both Aluminium matrix composites (AMCs) and Aluminium matrix nano-composites (AMNCs). In case

of comparative study on fabrication process route, both liquid state (stir casting) and solid state (powder metallurgy) processes have been considered in the present study. It is studied that the stir casting process provides good mechanical strength in comparison to powder metallurgy process irrespective of matrix and reinforcement material combinations and their weight or volume fraction. However, nano-sized reinforcement material improves more mechanical properties of composites as compared to micro-sized reinforcement material for the same weight/volume fraction. It is also studied that type and weight/volume fraction of reinforcement material in the matrix phase are highly responsible for the improvement of mechanical properties of AMCs irrespective of macro and nano-sized reinforcement material and the fabrication process.

Design and Analysis of 7MW Rated Power Wind Turbine for Delhi location (28064' N, 77012' E)

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Abstract: In the present work, a 700KW rating power wind turbine has been designed for Indian climate conditions considering the effects of various loads such as the centrifugal force of blades, wind drag force, and lift/driving force in the plane of rotation acting upon the wind turbine parts. The Rotor Blade of 35meter is selected and to avoid interference between the blade and generator, the tip chord length of the Extender is taken as 1735mm with a 1meter bolt circle diameter. By doing stress analysis and finding the deflection of the Axel, the study concludes that the maximum induced stress in the Axle is 93 MPa, which is within the safe limit of 100 MPa, whereas, the maximum deflections at the near end and the fixed and of the bearings are 1.84mm & 0.18mm which are within allowable ranges of 1.9mm and 0.2mm respectively. Further the slope of the rotor due to deflections at the bearings was found equal to 0.063°, which is within the permissible limit of 0.1°. The mid bearing of the axle beam was designed with 240mm and 360mm inner and outer diameters respectively, while, the free end bearing was designed with 240mm and 320mm inner and outer diameters respectively. Further, a 3-D Axle beam with 6 degrees of freedom was designed by ANSYS and the maximum deflection at a free end of the beam was found to be 1.812mm with 1.5% variation in comparison to deflections calculated on I-DEAS-11.

Comparative Investigation on Mechanical Properties of AMCs Fabricated through Liquid and Solid-State Fabrication Process

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Abstract: This current research work is primarily focused on comparative experimental study of various experimental aspects and parameters of fabrication process like Stir casting and Powder Metallurgy on mechanical properties or strength of Aluminum metal matrix composites. In this work we have fabricated the samples of Pure aluminum incorporated with aluminum oxide (Al_2O_3) as reinforcement at different wt.%. Further the samples were studied for their optical microstructure and microhardness. Our experimental research has observed that the stir casting process gives better mechanical properties than powder metallurgy. And their experimental aspects like wettability, binding agents, reinforcements, sintering temperature, and compaction pressure does play the key role to achieve the desirable outcomes. In our samples SC5 (stir cast 5wt.%) gives approximately ≈64.5 HV than other samples and For Powder metallurgy PM5_500 (Powder Metallurgy 5wt.% 500°C) give more better results than PM5_700 sample.

A Hybrid Optimization Technique for Maximizing Photovoltaic Power Supply Efficiency

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Abstract: This paper offers a hybrid MPPT approach based on modified P&O and PSO for monitoring the global peak power of a solar generator under uniform, dynamic, and partial shading situations. The conventional PSO-based MPPT method has a very high convergence time due to an enormous search space.

The standard P&O algorithm is used in the existing hybrid P&O and PSO technique for perturbing the global best particle to a higher fitness function value. Since the P&O algorithm drifts away from maximum power point during dynamic irradiance changes, the global best particle drifts away from a better fitness function value. This disrupts the idea of tracking maximum power in a dynamic solar irradiance situation. In the proposed hybrid method, a modified P&O algorithm is used in which current is also taken into consideration along with voltage and Power for the decision-making process.

Hence the drift during dynamic solar irradiance can be avoided and maximum power point can be found easily.

According to the findings of its validation using existing optimization approaches, the proposed MPPT methodology is effective in terms of quick dynamic reaction and precision.

Novel Face Detection and Emotion Recognition Model Using Correlation Attention Module Based Deep Convolution Neural Network

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Abstract: Faced detection along with emotion recognition plays a major role inhuman-computer interaction and both possess multiple challenges due to the various illuminations, occlusions, and so on. The labeling of varying emotions is performed by multiple researchers and still, there is a need for improvement in those models. This research intends to initiate a deep learning-based face emotion detection model that can accurately determine a person's emotion from the image. The performance is enhanced by the deep Convolutional Neural Network (deep CNN) classifier, which correctly identified the facial expressions of emotions due to the effective learning of the features present in the image. A correlation attention module is developed for the identification of the relationship between the extracted features by Residual Network 101 (ResNet 101) and VGG 16, which helps in boosting the efficacy of the classifier. Based on CK+48's performance in terms of accuracy, sensitivity, and specificity, the face detection model's efficiency is 94.46%, 95.00%,and 92.19%, respectively, while the emotion detection model achieves values of98.73%, 98.10%, and 99.55%. Similarly, using Japanese Female Facial Expression (JAFFE), the face detection model's efficiency is 94.46%, 95.00%, and 92.13%,while the emotion detection model achieves values of98.73%,98.10%,and98.55%.

Comprehensive Performance Evaluation of Various Solar PV Cells at Different Atmospheric Conditions

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Abstract: The conventional electrical sources are having the issues of high environmental pollution with greenhouse gas emissions, plus more operational problems. In addition, it required more human power for managing the conventional power networks. In this work, the solar renewable power is utilized to limit the problems of conventional power systems. The features of sunlight power are easy handling, free from the harmful gases releasing, low maintained cost is required, plus free of cost. The solar electricity networks behavior is nonlinear fashion, and the achieving of high voltage from the solar network is highly difficult task. So, the proper design of solar arrays gives a major concern for improving the efficiency of overall power network. Here, there are various diode PV cell mathematical design analysis has been done in terms of voltage, current, Fill Factor (FF), extracted power, plus efficiency. The entire PV cells performance evaluation has been done by utilizing the MATLAB/Simulink tool.

A Variable Step Size MPFNN fed MPPT Controller for Solar PV Standalone Systems

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Abstract: As of the current scenario, the conventional power sources availability is reducing extensively. Also, conventional power systems release carbon dioxide, methane, and hydrochlorofluorocarbons. As a result, greenhouse gases directly affect the day to day human life. The difficulties of nonrenewable power sources are compensated by utilizing natural renewable sources. The most predominantly used renewable power source is sunlight energy because its merits are high availability, plus free of cost. Also, this power source gives very less pollution. The drawback of this source is nonlinear working behavior. Here, the adaptive Variable Step Size- Multilayer Perceptron Feed Forward Neural Network (VSS-MPFNN) is proposed to obtain the maximum power of solar at different atmospheric nature conditions. The proposed controller is equated with the Adaptive Incremental Conductance, plus P&O controllers. The Photovoltaic (PV) power is stabilized by using the high step-up DC-DC converter.

Control Strategy for Electric Vehicles Storage Management in Micro grids for Ancillary Support

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Abstract: Electric Vehicle (EV) battery can be utilized to support low voltage networks or micro grids during its idle timings. Renewable sources such as solar and wind are certainly uncertain in terms of amount of power generation. So, battery storage is inevitable in order to sustain the power dynamics especially in micro grids. In this article, we propose an energy management strategy that makes use of EV battery storage to support the grid through voltage and frequency regulation. This work mainly focuses on maximum exploitation of EV storage for voltage and frequency regulation of the micro grid. We use EV prioritization strategy using Adaptive Neuro Fuzzy Inference System (ANFIS) with multiple decision variables. It maximizes EV storage usage and battery life as well. The multi-objective optimization problem, which aims to minimize voltage and frequency deviations, is solved using the Augmented ε-constraint (AEC) method. The resulting Pareto front is utilized to determine the Optimal Power Transaction (OPT) between the grid and EV. This approach is applied to a microgrid with renewable energy sources and EVs, and its effectiveness is evaluated through a series of case studies.

Injection Technique to Control Flow Separation in Hypersonic Intake

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Abstract: The present work delivers the impact of active flow control technique i.e., injecting fluid into the boundary layer to control flow separation in the hypersonic intakes. The flow separates in intakes due to the interaction of the shock wave with the boundary layer and forms like a bubble in the isolator affecting mass flow into the combustor. The flow domain of the hypersonic intake is designed with different numbers of Injectors, angle of injection and mass flow rate analyzed using SSTkω model in Fluent ANSYS. Comparatively, the performance of hypersonic intake is reduced marginally due to Injection. The fluid within the boundary layer is energized due to the injection of fluid into the boundary layer to resist adverse pressure gradient

which is the major cause of flow separation. Decreasing the distance between the Injector location and the separation point improves the control of separation with a low mass flow rate. The total-pressure recovery is also decreased due to Injection. But increasing the mass flow rate beyond 4% creates a normal shock in the isolator and leading an unstarting phenomenon.

Prediction of Medication Drug Side Effects for Global Healthcare

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Abstract: Most drugs have negative side effects when used to treat ailments. The development of new pharmaceuticals is slowed down by side effects, which are one of the major barriers to a drug's commercialization. Numerous researchers have attempted to develop various ways to identify medication side effects early in the drug development process based on the frequency and severity of these adverse effects. Determining the side effects of a particular medicine requires the development of rapid and accurate detection tools. In this paper, the machine learning approach is used to predict drug side effects. The model built, gives a high accuracy of 97.78% when compared with state-of-the-art machine-learning models. Thus, guarantee success by limiting the adverse effects of treatment.

Accurate Estimation of Parameters of Interest of a Rapid Prototyped Part Using XGBoost Machine Learning Algorithms

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Abstract: Manufacturing processes need continuous updating. Despite of Rapid Prototyping is the most recent technology; it is not an exception for the same. Consequently, the Rapid Prototyping process parameters must be precisely calibrated to produce objects with the desired properties regardless of their application field. The most desirable build in parameters in and 3D printing software is orientations along x and y axis, layer thickness. Without predictive model, to get prior information about material requirement, time consumption for 3D printing and volumetric error before printing is not possible. This study develops the predictive model using XGBoost machine learning algorithm to predict the requirement of model and support material along with time required for printing and percentage volumetric error. The

accuracy of different model for prediction of these four parameters were assessed by means of mean square error, root mean square error, R2 score and adjacent R2 score. It has observed that model shows 99.08%, 97.01%, 97.63% and 99.95% accuracy for model material, support material, time consumption and percentage volumetric error respectively.

Artificial Intelligence in Adulterant Detection for Public Health Concern

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Abstract: Adulteration in dairy products is done by mixing various ingredients in it. Similar to food adulteration, today milk adulteration is also becoming common nowadays. To enhance the volume of milk, mixing of water or other ingredients is added. This may lead to several severe problems when whey, fats and are added to it. In this paper, a novel method using artificial intelligence is proposed to detect milk adulteration using various machine learning models. A model with an ensemble voting classifier has been built, which gives a high accuracy of 97.04% when compared with state-of-the-art machine-learning models. Thus, testing and predicting the quality of the milk.

Assessment of Durability parameters of Quaternary Blend High Performance Concrete

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Abstract: Durability of the Quaternary blend high performance concrete (QB-HPC) is a crucial property that reflects the life of the structure under different climatic and environmental conditions. In this regard, this study identifies the extent of impact of replacement of cement with three independent supplementary cementitious materials that are fly ash (FA) with addition of granulated blast furnace slag (GBFS) and nano-silica (NS). The experiments were designed for the M60 grade HPC and optimization was performed using Box-Behnken Design (BBD) and response surface methodology tools of Design Expert Software. This strategy's goal was to evaluate the influence of process factors i.e., dosage of GBFS, FA and NS, on the response parameters i.e., 28-day durability properties i.e., water permeability (WP), chlorine penetration (ClP), ultrasonic pulsevelocity (UPV) and sulphate resistance (SR). The results of this investigation clearly showed that under optimal circumstances, % dosage for GBFS, FA and NS = 0.99, 0.79 and 0.94, respectively, the WP, ClP, UPC and SR were observed to be 34.04 m/s, 2341.97 coulumbs, 6249.99 m/s and 1.63%, respectively. Hence, this study may encourage the use of the

SCMs in the HPC and reduce carbon emissions by decreasing the reliance on construction industry on cement production.

Feasibility analysis of examining the effects electrifying public transportation buses in India's Delhi city

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Abstract: In a developing country like India, the urban city's transportation is facing very high demand due to the increasing population in urban cities. There are more private vehicles on the road and there is a very huge increase in public transport which is contributing towards traffic congestion on the roads and very high air pollution in urban cities. One of the solutions to the above-mentioned problem is to replace all the public transport buses from CNG and diesel to either electric or compressed natural gas buses. It can reduce the air pollution in urban cities to a very large extent due to reduction in emission of various greenhouse gases. By comparing electric buses to traditional diesel and CNG buses, this paper investigates the feasibility of using electric buses for public transportation. We have done financial analysis along with greenhouse gases emission analysis. It is well known that replacing diesel buses with electric buses is not feasible in near future but it is a better economical option in the long run and also electric buses cause very less air pollution and are safer for human health. To sum up, the replacement of traditional diesel and CNG buses with electric buses has the potential to offer significant advantages to urban cities such as Delhi in India. The alleviation of traffic congestion, along with the reduction of air pollution and greenhouse gas emissions, can be achieved with its help. Numerous research papers suggest that electric buses generate fewer pollutants compared to conventional buses, leading to improved air quality and better public health. For instance, a study in Delhi indicates that electric buses could reduce fine particulate matter (PM2.5) emissions by up to 99.98% compared to diesel buses. Furthermore, electric buses prove to be more cost-effective in the long term because of their lower operating expenses, reduced maintenance requirements, and longer lifespan. According to the International Council on Clean Transportation, electric buses in India are expected to achieve cost parity with conventional buses by 2030. Therefore, the implementation of electric buses has the potential to address the transportation challenges experienced by developing nations' urban cities. The utilization of electric buses can contribute towards the reduction of air pollution, improvement of public health, and promotion of a sustainable future.

Intrusion detection system in Cyberattacks: A Review

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Abstract: In the recent cyber world, there is a big threat to information security in different organizations. In recent times information is not secure due to cyberattacks which are very harmful to those different organizations that have very sensitive information. To identify these types of attacks we have a system known as an Intrusion Detection System. Intrusion detection systems (IDS) work by analyzing network traffic and system logs to detect any signs of suspicious activities or malicious behavior Once the IDS detects suspicious activity, it generates an alert and sends it to the security team to investigate further. The security team can then analyze the data generated by the IDS and identify the type of attack, the extent of the intrusion, and take appropriate action to contain and remediate the issue. This paper presents a detailed review of intrusion detection systems and the main challenges in IDS. This paper also presents new technologies in the area of Intrusion Detection Systems which can improve the performance of IDS.

An approach to evaluate the Accessibility and inclusion of public space

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Abstract: Access to public spaces is a crucial problem for people with disabilities as it instantly impacts their capacity to participate fully in society. As a result, including universal design in design practices is critical for providing infrastructure and services that allow individuals to live freely and equitably and participate in society. However, despite growing study in this field, universal design principles remain unreliable; hence, there is a need to establish a reliable approach to evaluating the accessibility of public spaces while addressing the needs and desires of people with diverse abilities. The Importance-performance analysis (IPA) approach was adopted to evaluate the accessibility of a college cafeteria. Affinity mapping techniques were used to determine the four fundamental user needs: functionality, usefulness, sociability, and aesthetics. According to the findings, all four needs should be considered while developing an accessible and inclusive design.

Chickpea shell Biowaste-derived hard carbon as anode material for Lithium-ion batteries

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Abstract: There has been a continuous increase in the demand for low-cost, high-performance materials for Li-ion batteries (LIBs). This study investigates the use of chickpea shells derived hard carbon (CSDHC), developed through pyrolysis at 900 °C, as an anode material for lithium-ion batteries. Formal structural characterizations such as X-Ray Diffraction (XRD) and Raman spectroscopy studies confirm the prepared hard carbon as CSDHC. It was concluded that the cost-effective CSDHC makes a promising anode material for LIBs. The material displayed a specific capacity of 184 mAh/g and excellent capacity retention of 98.0% after 100 cycles at 0.1 C rate when utilized as an anode for Lithium-ion batteries. The findings suggest that the high-potential slope region shows adsorption/desorption characteristics on the surface-active sites, while the low-potential quasi-plateau region represents ion insertion/extraction in the graphitic microcrystalline interlayer. It is worth mentioning that Lithium-ion is randomly intercalated within the hard carbon graphitic microcrystalline layer without forming a segmented intercalation compound structure.

Comparative Study on Song Recommendation System

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Abstract: With the growing availability of music streaming services, there is a demand for personalized music recommendation systems that can match users' interests and tastes with music. Machine learning techniques are used in song recommendation systems to produce recommendations based on a user's listening history and other data. The goal of this research is to build a song recommendation system that will present users with personalized music recommendations based on their listening history. Aim is to recommend if a listener will save a song in the liked playlist. The proposed music recommendation system makes recommendations using collaborative filtering, content-based filtering, and a hybrid approach. The system was built using a dataset of user listening histories from a music streaming service, and its performance was measured using a dataset of user feedback on the recommendations. The proposed song recommendation algorithm has practical implications for music streaming businesses trying to improve user engagement and experience. It can also be used to generate insights about user preferences and behaviour for marketing and product development purposes. This paper utilized various machine learning techniques such as linear regression, decision tree, random forest, logistic regression, and support vector machine (SVM) to address the classification problem.

SafarNaama: An Advanced Intelligent Tourist Guide

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Abstract: The aim of this project is to build a system that can be operated on any system and offer a great help to the people who want to visit any unknown place. This system will allow the visitors to find an appropriate guide who will help them to explore any particular place in a much better way.

This website will, thus, also create employment opportunities for tourist guides. The guides will be informed via email whenever any user selects them as a guide. Even the visitor after visiting that place can register himself as a guide. The guides will also get a rating which would be given by the visitors according to their work.

Attendance System Using Fingerprint

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Abstract: This study focuses on the implementation of a fingerprint-based attendance management system in a university context to address the challenges of controlling student attendance during lecture periods. The system utilizes biometric identification through fingerprints, which is both distinctive and consistent over a person's lifetime, to tackle the problem of impersonation and ghost workers in both the public and commercial sectors. The system's unique abstraction lies in its application in the university context, providing a solution to the challenges of student attendance monitoring, which is crucial for effective academic performance evaluation.

The Effects of Various Waste Materials as Partial Replacements of Binder Material in the Production of Structural Concrete

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Abstract: Supplementary Cementitious Materials (SCMs) which are supplementary cementitious materials, are added to concrete mixes to improve their properties and reduce their environmental impact. Some common SCMs include fly ash, slag, silica fume, red mud, construction and demolition waste (C&D), mortar waste, etc. The use of SCMs in construction can help to reduce the amount of Portland cement required in concrete

production, which is a major source of carbon dioxide emissions, and thereby lower greenhouse gas emissions. Incorporating SCMs can enhance the durability and performance of concrete, making it a more sustainable choice for construction projects. The use of SCMs is therefore a key aspect of sustainable construction practices and the construction industry is actively researching and developing new materials to further improve the sustainability of concrete. There are many alternatives available for cement replacement and to improve the overall quality of the concrete without compromising its strength. This study used the M25 grade of concrete mix and employed mortar, red mud, and eggshells as cement substitutes to evaluate compressive strength results after 7, 14, and 28 days of curing. The findings demonstrated that, compared to traditional concrete, using these waste materials resulted in superior structural properties of concrete. Furthermore, SEM analysis were carried out to investigate the micro-structural characteristics of different waste materials.

Custome Rise :- Marketing Enhancement using customer segmentation in Flask and K-Means workflow in Python

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Abstract: In today's highly competitive business environment, understanding customers needs and preferences is essential for companies to succeed. Customer segmentation, the process of dividing customers into groups based on shared characteristics, is a powerful tool for marketers to tailor their offerings to specific customer needs and preferences. In recent years, advances in machine learning and data analysis have made it easier and more efficient to segment customers based on a wide range of attributes. This paper presents a data-driven approach to customer segmentation using Python. We collected data from a large e-commerce company, including demographic information, transaction data, and website engagement metrics. We used Python libraries such as Pandas, NumPy, and Scikit-learn to clean and preprocess the data, perform exploratory data analysis, and build machine learning models. Our approach involved three main steps: data preprocessing, feature engineering, and clustering. We first cleaned and transformed the raw data into a format suitable for analysis. Next, we engineered new features such as recency, frequency, and monetary value to capture different aspects of customer behavior. Finally, we applied K means clustering, a popular unsupervised learning technique, to group customers based on their similarities. Our results showed that our approach was effective in identifying distinct customer segments. We were able to identify six segments with different behavioral patterns and demographic characteristics. For example, we found that one segment was made up of high value customers who made frequent purchases, while another segment consisted of low-value customers who made infrequent purchases. We also

found that some segments were more likely to engage with the website and use certain features, such as wish lists and product reviews.

Exploring End-User Adoption of Blockchain Technology for Online Payments: An Empirical Study

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Abstract: Blockchain technology revolutionizes financial transactions in various industries, including online retail and e-commerce. However, due to the lack of a centralized authority, transaction disintermediation, and insufficient restrictions, end-users have been focusing more on privacy and security in online transactions. n this study, the researchers investigated the perceived value of end-users on privacy and security and how it affects their confidence and intention in using the technology. The study collected sufficient information using a well-structured questionnaire from 287 sample respondents. The results indicated that anonymity, traceability, and information privacy risk are the most significant determinants of end-user trust in blockchain technology, whereas information security fraud risks do have not much impact. The study highlights the need to increase end-user knowledge regarding information privacy issues and potential security risks associated with blockchain technology. This research provides valuable insights into blockchain technology and its effects on end-users perceptions of security and privacy.

Mathematical Model Viability for Polyethylene Terephthalate Concrete Appraisal

Ayush Meena[1], Rakesh Choudhary[1], Engammagari Ganesh[1], P.V. Ramana[1]

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Abstract: This study investigates the viability of using Polyethylene Terephthalate (PET) as a replacement for sand in concrete production. The study involves replacing sand with PET at varying percentages of 0%, 1.5%, 3%, 4.5%, and 6% by weight. The resulting concrete is then evaluated for compressive, flexural, and split tensile strength. Regression analysis is also conducted to determine the correlation between the percentage of PET used and the concrete properties. The results show that the replacement of sand with PET significantly affects the concrete properties, with an increase in PET percentage resulting in a decrease in strength. The study concludes that PET can be used as a partial replacement for sand in concrete production. Still, careful consideration must be given to the percentage used to avoid compromising the structural integrity of the concrete. The mathematical model developed in this study can be used to optimize the percentage of PET used in concrete production, leading to the production of sustainable and eco-friendly concrete.

Mechanical Hindrance Second Order Problems through Novel Approach

Engammagari Ganesh[1], P.V. Ramana[1], M.K. Shrimali[1]

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Abstract: Bridge problems are complicated. Complex mathematical techniques like partial differential equations, functional analysis, and calculus of variations are often required for higher-order issues. These techniques may be used to develop numerical methods for estimating the solutions to these challenging issues or analytical solutions. Bridge-related matters may be resolved in a variety of ways. A new approach, the novel method, was created among the other existing ways. The bridge issues in this paper are solved using the Novel approach. Static, dynamic, and different types of problems may be solved using this method. The key benefit of this approach is that it solves issues more quickly and accurately than other approaches. This method considered and resolved second-order bridge issues in the current research. A fundamental supported continuous beam with n supports and various loading conditions is employed. Specifically, two groups of bridges with varied lengths were evaluated. The entire length of the beam was supposed to fluctuate between -1 and 1 in the first example, and between 0 and 1 in the second example, before being solved using different approaches. Boundary circumstances were taken into consideration to resolve every instance involving space. Based on the outcome of this methodology, it can be seen that, in terms of space, the unique method approaches results are accumulating quickly and approaching the precise answer. The outcome of this procedure is then compared to the exact answer, and observed that it is nearly the same. For academic reasons and in numerous technical sectors, the current research will help resolve any issues with this method.

Relevance and Management of Sustainable Nature in Ancient Indian Scriptures in Present Scenario

Sudhir Kumar Gaur[1] and Deep Gupta[2]

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Abstract: Thousands and thousands years back ours sages knew the importance of sustainable environment and its importance for the human being with close association of flora and fauna. The ancient Vedas have several references to protect the environment, weather cycles, ecological balance, hydrological cycles and precipitation which indicates the sensitiveness of awareness of the seers and general people at that time. To save the environment was closely related and associated with the religious

holy rituals and education for a common person which emphasised its impact in the curriculum of education in Gurukuls. Rig Veda which is the ancient scripter in the world have a special respect of deities like Indra, Varuna, Mitra, Agni, Maruts, Aditya etc. that are responsible for keeping the requisite equilibrium in the functioning of all entities of mountains, falls, rivers, lakes, forests, oceans etc. Several hymns looking for the five basic gross elements i.e. BHAGVAN like Bhoomi, Gagan, Vayu, Agni, and Neer(water).

All the four major Vedas in favour to maintain the seasonal cyclesthat are likely to get altered due to the climatic changes owing to adversebehaviour of human activities. The importance of environment acknowledged by our holy scripture in a holistic manner and each one of them advocated to preserve the dignity of it. Some of the Vedic hymns invoke heavenly interventions to bless and nourish the environment. Lord Krishna himself identified (chapter 15 of Geeta) with Peepalin trees, the exceptional quality of this tree is that its roots above its peak and its branches are located at the lower part, it is pure, which provide oxygen round the clock, green leaves are the Vedas (holy scriptures and sacred songs). The talk will cover the importance of flora and fauna in the holy scriptures of India. Research done by speakers in the field.

A Comprehensive System for Automatic License Plate Detection and Recognition

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Abstract: Automatic License Plate Recognition (ALPR), is a computerized system that uses optical character recognition (OCR) to automatically read license plate information. ANPR systems can be used in a variety of applications such as traffic management, toll collection, and law enforcement. The main advantage of ANPR is its speed and accuracy. Accuracy has increased from 82.73 percent in YOLO to 86.53 percent in our method. ANPR systems can read license plates at high speeds, enabling the processing of large volumes of vehicles. The technology is also highly accurate, reducing the likelihood of errors that can occur with manual systems or during highly unfavorable climatic conditions. The complete procedure may be broken down into the following five steps: vehicle image capture, preprocessing, number plate extraction, character segmentation, and character recognition. The paper describes the usage of a Generative Adversarial Network, OpenCV, and Optical Character Recognition to identify the number plate on a car using an inspection camera that has been put in the appropriate locations. In addition, ANPR systems can be integrated with other technologies such as cameras, sensors, and databases to enable the tracking and identification of vehicles. Overall, ANPR is a powerful technology that offers significant advantages over previous manual systems in terms of speed, accuracy, and integration with other technologies.

Influence of Stress on Menstrual Health in Females: A Case Control Study

Ujjawal Kumar, Sujeet Kumar, Shrishti Sharma, Ghazi Abbas, Rakhi Bhardwaj, Shiva Sharma*, Manisha Rastogi*

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Abstract: Dysmenorrhea is one of the most prevalent menstrual problems among females leading to bed-ridden situations in severe cases. Chronic stress has been shown to exaggerate menstrual irregularities including dysmenorrhea. This study investigated menstrual health differences between working females who experienced stress (n=20) and those who did not (n=23). Upon selection based on demographic parameters, participants were examined using the Moos menstrual distress questionnaire, the Modified McGill pain questionnaire and a Visual Analogue Scale (VAS) pain scale. Results showed that moderately stressed females had higher levels of menstrual-associated pain, dysmenorrhea and physiological changes, while their menstrual cycle length and flow remained unaffected. These findings suggest that stress can cause dysmenorrhea. This highlights the importance of managing stress levels to improve female menstrual health.

Pulmonary functioning and body composition analysis in college going Adults

Sujeet Kumar, Ujjawal Kumar, Yoginder, Rohit Sharma, Siddharth Kumar Gautam, Ghazi Abbas,

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Abstract: Pulmonary function testing (PFT) is an essential tool for diagnosing and assessing lung problems and the effects of treatments. PFT can also compare a person's lung function with the reference values that are based on their height and weight. Weight is composed of fat-free mass and fat mass, and these can be different depending on lifestyle; people who are active tend to have higher fat-free mass, while people who are sedentary will have fatter mass. College years are a crucial time for young adults' weight gain and body composition. Physical health is negatively impacted by changes in body composition and cardiovascular function. This study is designed to examine pulmonary functions in college-going adults with respect to their body composition. Research findings suggest that pulmonary function and body composition are connected, and age is a key influencing factor. Age is not the only variable to consider when exploring the connection between pulmonary function and body composition.

Brief Overview of Different Welding Techniques with Recent Advancements

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Abstract: The act of combining two or more pieces of metal or thermoplastics by heating them to the point of melting and subsequently cooling and solidifying them is referred to as welding. The welding process is an essential part of many industrial and manufacturing processes, including construction, automotive, aerospace, and many others. In this review paper, the different methods of welding and the latest developments in welding technology will be a topic of discussion.

ON ESTIMATION OF FINITE POPULATION MEAN USING AUXILIARY INFORMATION IN PRESENCE OF MEASUREMENT ERROR

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Abstract: In this paper a new estimator for estimating finite population mean using auxiliary information under measurement errors is proposed. The expressions for the bias and mean squared error (MSE) of the proposed estimator are derived to the first order of approximation. The efficiency comparison of the suggested estimator with the usual estimator of mean has been done theoretically and numerically both. The theoretical and numerical results confirm the superiority of the suggested class of estimator over the other.

A Biometrics-based Authentication Protocol for Mobile Devices

Saru Kumari

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Abstract: Gone by years have been marked with ever increasing use of mobile devices for carrying various transactions via Internet. Mobile devices such as laptops, tabs, smart cards, personal digital assistants (PDAs) and smart phones are quite popular these days since these are independent of wired technology. In recent times, Odelu et al. designed a biometrics-based authentication protocol for mobile devices. In this work, we thoroughly

analyse this protocol. We comprehensively discuss our analysis. Our analysis is fruitful for effective design of future authentication protocols for mobile devices.

A lightweight protocol for user authentication and key agreement in multi-gateway based WSN

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Abstract: Wireless sensor networks are easily deployable in any attended or unattended environment such as military, health care, environmental monitoring, agriculture, etc., In such scenario, an authentication protocol plays an important role in secure communication over insecure wireless networks. In this work, we focus on the security of a recently proposed password-based authentication and key agreement scheme for wireless sensor networks. We find that the protocol is not secure due to the possibilities of attacks such as stolen-verifier, impersonation, and online password and user identity guessing. We discuss these problems in a detailed manner to make each aspect of the problem very clear.

An improved user authentication and key agreement protocol based on the notion of the 'Internet of Things'

Saru Kumari

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Abstract: Recently, a user authentication protocol for WSNs architecture was proposed. The designer of the protocol claims that it is strong enough to defy various known attacks and also offers several attractive features. However, we find that it is not designed suitably to provide the security against offline password guessing attack, stolen smart card attack, etc. We analytically prove our findings.

A multi-factor remote user authentication protocol

Saru Kumari

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Abstract: Recently, we came across a multi-factor based remote user authentication protocol for Internet of Things environments. The authors

claim state that using their protocol, any authorized user can access and gather real-time sensor data from the IoT nodes. Before gaining access to any IoT node, the user must first get authenticated by the gateway node as well as the IoT node. The authors claim that their scheme satisfies desirable security attributes and maintains acceptable efficiency in terms of the computational overheads for resource constrained IoT environment. When we studied this improved protocol, we find that it suffers from the privileged insider attack and inefficient authentication. Hence it requires further improvement.

A quantum secure authentication protocol for satellite communication

Saru Kumari

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Abstract: In this study, we first analyze a recent protocol on authentication for satellite communication using benefits of post quantum cryptography. We observe that the protocol is an improved version of Kumar and Garg's protocol. The authors claim that the protocol resists the vulnerability of Kumar and Garg's protocol and provides post-quantum security for satellite communication. However, we find that the protocol is vulnerable to a key mismatch attack and offline dictionary attack.

Evaluation of Antibacterial Properties of Green-synthesized Silver Nanoparticles Impregnated Tri-composite Hydrogel Derived from Natural Polymers

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Abstract: Hydrogels are three-dimensional networks of polymers (natural or synthetic in origin) cross-linked through physical or covalent bonds. Since hydrogels contain many hydrophilic groups, they can retain very high amount of water mimicking living tissue. Hydrogels are being used as delivery vehicles for several bioactive molecules alone or loaded with nanoparticles. With the development of nanotechnology, silver nanoparticles (AgNPs) have garnered significant attention due to their antimicrobial activities. In this study, we described the development of a carrageen-PEG (polyethylene glycol)-gelatin based hydrogel system loaded with green synthesized silver nanoparticles. The green synthesis of silver nanoparticles was performed by utilizing the de-oiled castor seeds as reducing agent and antibacterial properties were evaluated using both gram positive (Staphylococcus aureus) and gram-

negative bacteria (Escherichia coli). Silver nanoparticles were then subjected through a series of physicochemical characterizations including dynamic light scattering (DLS) and filed emission electron microscopy (FESEM) for particle size distribution, and Fourier transform infrared (FTIR) for functional groups assessment. The DLS analysis revealed that the Z-average value of synthesized nanoparticles was 105 d.nm with a PDI (polydispersity index) of 0.469. The green synthesized silver nanoparticles were shown to be rounded in morphology with an average size of 60 nm as depicted by FESEM study. A comparative antimicrobial study was performed using hydrogels with or without nanoparticles. The result showed the good antimicrobial properties when tested against both bacteria (Escherichia coli as gram -Ve and Staphylococcus aureus as gram +Ve). This demonstrated that the fabricated silver nanoparticles impregnated hydrogels hold potential for clinical antibacterial and wound healing therapy.

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Technical Program Schedule

Day-I (23th May 2023)

INAUGURAL CEREMONY					
i	Lighting of Lamp	iv.	Address by Prof. (Dr.) A. P. Garg, Vice Chancellor	Venue: University Auditorium 09:30 to 11:30	
ii	Welcome Address: Prof. (Dr.) Vinod K Tyagi, Dean, Faculty of Engineering & Technology	v.	Address by Chief Guest: Prof. Rajive Kumar Member Secretary, AICTE		
iii	Address by Prof. (Dr.) Jayanand, Pro Vice-Chancellor	vi.	Address by Hon'ble Chancellor		
		vii.	Vote of Thanks: Prof. (Dr.) Tarun K Sharma		
HIGH TEA FOLLOWED BY GROUP PHOTOGRAPH				11:30 to 12:00	

S.No.	INVITED SPEAKER	
1.	Dr. N. L. Singh, Emeritus Professor, Netaji Subhas University of Technology, New Delhi, India.	12:00 to 13:00
	NETWORKING LUNCH	13:00 to 14:00
	CULTURAL PROGRAMME	18:30 to 19:30
	GALA DINNER	20.00 to 21.00

TECHNICAL SESSION – I: Advanced Materials and Nanotechnology				14:00 to 17:15
Session	Session I (Offline)	Session II (Offline)	Session-III (Offline)	Session-IV (Online)
Invited Talk (14:00 to 15:00)	Dr. Sapna Katiyar Impledge Technology, Noida, Utter Pradesh, India.	Dr. Sukhvir Singh Professor, Netaji Subhas University of Technology, New Delhi, India.	Dr. Abhinav Saxena JSS Academy of Technical Education, Noida, Uttar Pradesh, India.	Dr. B.K. Nayak Ex-Associate Director (Physics Group), BARC. Presently, HBNI, Mumbai
Tea Break (15:00 to 15:15)				
Session Chair(s)	Dr. N. L. Singh, Emeritus Professor NSUT, New Delhi	Dr. Rajiv Dutta Professor, Shobhit University, Gangoh	Dr. Sandeep Chhabra - Professor, KIET Group of Institution, Ghaziabad, Uttar Pradesh, India	Dr. Shambhunath Barman Assoc. Prof. NIT, Sikim
Co-Chair(s)	Dr. Anil Nishad	Dr. Meenakshi Chaudhary	Dr. Jyoti Sharma	Dr. Nidhi Tyagi
Venue	University Auditorium	S-223	S-119	S-217
S. No.	ORAL PRESENTATION (Manuscript ID)			15:15 to 17:15
1.	IRST-2023-0002	IRST-2023-0041	IRST-2023-0098	IRST-2023-0083
2.	IRST-2023-0003	IRST-2023-0042	IRST-2023-0137	IRST-2023-0142
3.	IRST-2023-0010	IRST-2023-0043	IRST-2023-0223	IRST-2023-0143
4.	IRST-2023-0013	IRST-2023-0049	IRST-2023-0270	IRST-2023-0172
5.	IRST-2023-0014	IRST-2023-0082	IRST-2023-0277	IRST-2023-0221
6.	IRST-2023-0016	IRST-2023-0138	IRST-2023-0312	IRST-2023-0304
7.	IRST-2023-0017	IRST-2023-0141	IRST-2023-0340	IRST-2023-0307
8.	IRST-2023-0021	IRST-2023-0268	IRST-2023-0380	IRST-2023-0308
9.	IRST-2023-0024	IRST-2023-0271	IRST-2023-0384	IRST-2023-0354
10.	IRST-2023-0287	IRST-2023-0288	IRST-2023-0445	IRST-2023-0408
11.	IRST-2023-0293	IRST-2023-0374	IRST-2023-0491	IRST-2023-0454
12.	IRST-2023-0448	IRST-2023-0394	IRST-2023-0492	IRST-2023-0472
13.		IRST-2023-0490	IRST-2023-0533	IRST-2023-0480

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Day-II (24th May 2023)

INVITED SPEAKER		
Venue: University Auditorium	**Dr. Shiv Prasad Yadav,** Professor, IIT, Roorkee, India	**10:00 to 11:00**
HIGH TEA FOLLOWED BY GROUP PHOTOGRAPH		**11:00 to 11:30**

TECHNICAL SESSION – II: Emerging Technologies and their Applications					11:30 to 13:00
Session	Session V (Online)	Session VI (Online)	Session VII (Online)	Session VIII (Online)	Session IX (Online)
Session Chair(s)	**Dr. Rohit K. Singh** AKTU, Lucknow	**Dr. Ajay K. Singh** Jain University, Benguluru	**Dr. Prem C. Vashist** GL Bajaj ITM, Noida	**Dr. Amit Sharma** C.C.S. University, Meerut	**Dr Harish K Taluja** HRIT Ghaziabad
Co-Chair(s)	Dr. Mamta Bansal	Dr. Nidhi Tyagi	Dr. Nishant Pathak	Dr. Manoj Kumar	Mr. Ayush Madan
Venue	S-115	S-119	S-223	S-217	S-113
S. No.	ORAL PRESENTATION (Manuscript ID)				**11:30 to 13:00**
1.	IRST-2023-0004	IRST-2023-0120	IRST-2023-0162	IRST-2023-0015	IRST-2023-0301
2.	IRST-2023-0087	IRST-2023-0146	IRST-2023-0298	IRST-2023-0055	IRST-2023-0369
3.	IRST-2023-0136	IRST-2023-0163	IRST-2023-0349	IRST-2023-0147	IRST-2023-0375
4.	IRST-2023-0182	IRST-2023-0188	IRST-2023-0407	IRST-2023-0155	IRST-2023-0396
5.	IRST-2023-0209	IRST-2023-0290	IRST-2023-0422	IRST-2023-0226	IRST-2023-0397
6.	IRST-2023-0279	IRST-2023-0360	IRST-2023-0476	IRST-2023-0240	IRST-2023-0411
7.	IRST-2023-0373	IRST-2023-0370	IRST-2023-0537	IRST-2023-0246	IRST-2023-0414
8.	IRST-2023-0429	IRST-2023-0412	IRST-2023-0538	IRST-2023-0273	IRST-2023-0432
9.	IRST-2023-0438	IRST-2023-0499	IRST-2023-0541	IRST-2023-0276	IRST-2023-0447
10.	IRST-2023-0519	IRST-2023-0520	IRST-2023-0542	IRST-2023-0299	

Lunch Break					13:00 to 14:00

TECHNICAL SESSION – III: Innovations in Science, Engineering and Technology					14:00 to 15:30
Session	Session X (Online)	Session XI (Online)	Session XII (Online)	Session XIII (Online)	Session XIV (Online)
Invited Talk (14:00 to 14:40)	**Prof. Venktesh** Singh, CUSB, Gaya	**Dr. Anjum Qureshi** Sabanci University, Istanbul, **Turkey**	**Prof. P.P. Govender** University of Johannesburg, **South Africa**.	**Dr. A. Mishra** Institute of Advanced Materials, IAAM, **Sweden**	**Prof. C. M. Hussain** New Jersey Institute of Technology, Newark, **US**
Session Chair(s)	**Dr Jasvir. S. Rana** SU, Gangoh	**Dr. Swati Sharma** MIET, Meerut, UP	**Dr. Amit Kumar,** VSB Engineering College, Karur	**Dr. S. Basak,** C V Raman Global University, Orissa	**Dr. Bireswar Paul** MNNIT, Allahabad
Co-Chair(s)	Mr. Shamshad Hussain	Mr. Rajesh Pandey	Dr. Anil Nishad	Mr. Jitender Jadon	Dr. Sandeep Kumar
Venue	S-115	S-119	S-223	S-217	S-113
S. No.	ORAL PRESENTATION (Manuscript ID)				**14:40 to 16:00**
1.	IRST-2023-0165	IRST-2023-0126	IRST-2023-0250	IRST-2023-0054	IRST-2023-0028
2.	IRST-2023-0176	IRST-2023-0161	IRST-2023-0461	IRST-2023-0081	IRST-2023-0124
3.	IRST-2023-0198	IRST-2023-0232	IRST-2023-0462	IRST-2023-0193	IRST-2023-0129
4.	IRST-2023-0231	IRST-2023-0233	IRST-2023-0470	IRST-2023-0379	IRST-2023-0132
5.	IRST-2023-0326	IRST-2023-0236	IRST-2023-0500	IRST-2023-0469	IRST-2023-0220
6.	IRST-2023-0332	IRST-2023-0237	IRST-2023-0501	IRST-2023-0522	IRST-2023-0441
7.	IRST-2023-0358	IRST-2023-0453	IRST-2023-0502	IRST-2023-0540	IRST-2023-0505
8.	IRST-2023-0372	IRST-2023-0552	IRST-2023-0539		IRST-2023-0544

TECHNICAL SESSION – IV: Biotechnology and Life Sciences					16:00 to 17:10
Session	Session XV (Online)	Session XVI (Online)	Session XVII (Online)	Session XVIII (Online)	Session XIX (Online)
Session Chair(s)	**Dr. A K Sharma** LPU, Panjab	**Dr. B. Mangla** J.C. Bose University Faridabad	**Dr. Brajesh K Goswami** Subharti University	**Dr. Yogesh Sharma** Lovely Professional University, Punjab	**Dr. Naveen Kumar,** Shobhit University, Gangoh
Co-Chair(s)	Dr. Shiva Sharma	Dr. Rakhi Bhardwaj	Dr. Manju Rani	Dr. Meenakshi Chaudhary	Dr. Sonam Arya
Venue	S-115	S-119	S-223	S-217	S-113
S. No.	ORAL PRESENTATION (Manuscript ID)				**16:00 to 17:10**
1.	IRST-2023-0012	IRST-2023-0135	IRST-2023-0006	IRST-2023-0389	IRST-2023-0091
2.	IRST-2023-0267	IRST-2023-0145	IRST-2023-0127	IRST-2023-0479	IRST-2023-0478
3.	IRST-2023-0269	IRST-2023-0173	IRST-2023-0275	IRST-2023-0497	IRST-2023-0482
4.	IRST-2023-0296	IRST-2023-0345	IRST-2023-0523	IRST-2023-0543	IRST-ABST-001 & 2
5.	IRST-2023-0428	IRST-2023-0554	IRST-2023-0547	IRST- 2023-0556	IRST-ABST-003 to 5
6.	IRST-2023-0518				

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Day-III (25ᵗʰ May 2023)

INVITED SPEAKER		
Venue: University Auditorium	**Dr. Beer Pal Singh** Professor, Department of Physics, Chaudhary Charan Singh University, Meerut U.P., India	**10:00 to 11:00**
HIGH TEA FOLLOWED BY GROUP PHOTOGRAPH		**11:00 to 11:15**
Lunch Break		**13:30 to 14:30**
CONFERENCE VALEDICTORY || CHIEF GUEST || GUEST OF HONOUR		**12:15 to 13:30**

TECHNICAL SESSION – V: Emerging Trends of Interdisciplinary Research					**11:15 to 12:15**
Session	Session XX (Offline)	Session XXI (Offline)	Session XXII (Online)	Session XXIII (Online)	Session XXIV (Online)
Session Chair(s)	**Prof. (Dr.) Beer Pal Singh,** CCS University, Meerut	**Prof. P. V. Suresh** Director, IGNOU	**Dr. Dilkeshwar Pandey,** KIET Gr. of Inst. Ghaziabad	**Dr. Anil K. Dubey** GNIT, Grater Noida	**Dr. Satyendra K Srivastav,** SRM Sonipat
Co-Chair(s)	Dr. Nidhi Tyagi	Dr. Nishant Pathak	Dr. Anil Nishad	Dr. Rakhi Bhardwaj	Dr. Manoj Kumar
Venue	S-119	S-223	S-115	S-217	S-113
S. No.	ORAL PRESENTATION (Manuscript ID)				**11:15 to 12:15**
1.	IRST-2023-0096	IRST-2023-0035	IRST-2023-0111	IRST-2023-0131	IRST-2023-0057
2.	IRST-2023-0134	IRST-2023-0195	IRST-2023-0178	IRST-2023-0372	IRST-2023-0069
3.	IRST-2023-0148	IRST-2023-0342	IRST-2023-0310	IRST-2023-0399	IRST-2023-0073
4.	IRST-2023-0222	IRST-2023-0530	IRST-2023-0331	IRST-2023-0430	IRST-2023-0122
5.	IRST-2023-0371	IRST-2023-0555	IRST-2023-0385	IRST-2023-0442	IRST-2023-0295
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- **Micro Vickers Hardness Testers**
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College Enquiry chat-bot using NLP

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Abstract: **Today's world has greater artificial intelligence (AI) technology, which everyone is embracing for personal growth and to reduce manual labour. One of the finest applications of AI/ML technology is chatbots. Chat bots are sophisticated software programs that can understand user-generated queries and answer to such queries in a very human-like manner. New students encounter several challenges during the admissions process. A chatbot is used so that students may ask questions and receive responses without having to be physically present. The accuracy of the response depends on how well the question was phrased. The specified chatbot allows users to access voice to text, and vice versa.**

Keyword: Chat Bot, College bots, NLP, Text based bots.

I. Introduction

College campuses encompass enormous amounts of space. If a particular person has a question, he or she will need to visit many departments to acquire pieces of the answer to the inquiry they had. Every college employee does their utmost to help parents and students, to enroll their children in the courses they choose when admissions deadlines approach. The queue gets longer and everybody needs to be answered. By providing students with quick facts on entrance, courses, prices, and many other topics, the College Enquiry Chatbot will cut the labour in half. The defined chat bot helps to solve all these extra work load for the students as well as for the college staff. Students need not need to go to college and get in a queue standing and waiting for their turn to get all their questions answered. The process makes no sense and also wastes time and man power unnecessarily. It provides 24/7 services which raises productivity. Students can use a laptop or a smartphone to communicate with a chatbot online. Students ask various questions on admissions specifics in English language, and bot is able to provide them with the right replies. The chatbot makes the user feel like he/she is making a communication with a human, this is possible due to the NLP(Natural Language Processing) which for example works like if a user enters wrong spelling even then the bot answers correctly like a human could have by using its previous knowledge gathered and learned from others.

II. Related Work

The past 10 years have seen chat bots acquire popularity across virtually all online industries, including e-commerce, travel, government, higher education, business, and online ticketing. Authors Bayu Setiaji and Ferry Wahyu Wibowo[1] used relational databases to construct a chatbot based on pattern matching. To improve accuracy, the spell check was normalised once the spelling was checked.

In paper [2] authors H. Al-Zubaide and A. A. Issa created ontology based chatbot. OntBot converts ontologies and other information into relational databases using the proper mapping techniques, and then uses this knowledge to power its conversation. Matching rules are used to make the sentence match.

An artificial chatbot employing NLP (Natural Language Processing) has been proposed by [3]Nitesh Thakur, Akshay Hiwrale, Sourabh Selote, Abhijeet Shinde, and Prof. Namrata Mahakalkar. NLP may be used in two different ways: the first is through written text, and the second is through vocal or voice communication. Verbal communication is far more difficult than written communication. This study outlines an interest in certain newly developed comprehension and processing speed capabilities for virtual human discourse systems.

A chatbot system for college inquiries that was created using AI algorithms was proposed by [4]Prof. Ram Manoj Sharma. The bot interprets user communications and assesses user queries and returns suitable response

III. Architecture

Designing a chatbot determines how it will interact with users. The overall interface, chatbot personality, and the questions users will ask are all determined by the chatbot creator.
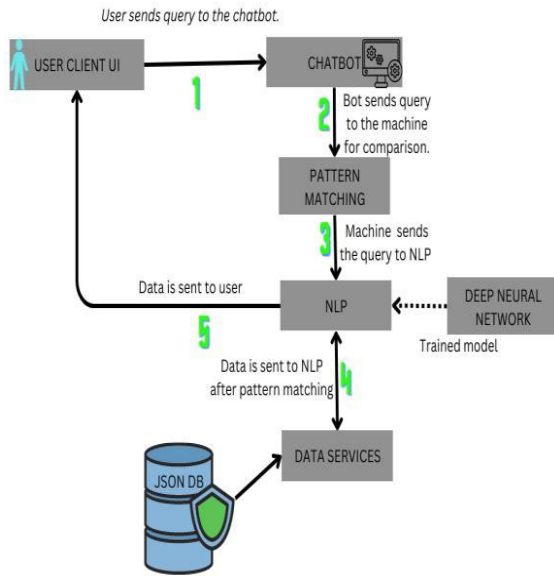
Figure 1: Architecture

User client UI

The GUI enables user interaction with the system. He or she will type the query into the available text field. Once the query has been sent, a bot-model will continue to handle that request.

Pattern Matching

This category mostly includes chatbots that are rule-based, scripted, and structured. These chatbots employ a knowledge base of papers, each of which includes a certain "pattern" and "template." The bot responds with the message from the template when it gets an input that meets the "pattern." The sentence that serves as the pattern might either be "What's your name?" or a pattern that reads "My name is * " where the "*" stands for a regular expression. Here, the same procedure has been followed by the bot to answer the queries of the user by finding the appropriate answer form the database

3.3 NLP

NLP, a component of AI and machine learning, which is at the core of a hybrid chatbot's structure, aids in its ability to comprehend natural language. A chatbot with

artificial intelligence (AI) decodes and interprets language in its spoken context.

It recognizes that orders or inquiries from users don't need to be as detailed because it is sensitive to the subtleties of human communication. NLP-enhanced chatbots replicate human-like interaction and interpret user intent to produce insightful-responses.

3.4. Data services

The most important component for the chatbot to function on user-bot interactions is data. The bot communicates with users using pre-defined data. The built chatbot makes use of the JSON database format. Semi-structured data is best stored in JSON databases, which are document-type NoSQL databases. When compared to the row-columns format, it is significantly more adaptable. It is an assortment of strings and arrays consisting of "Tags" ,"Questions", "Answers".
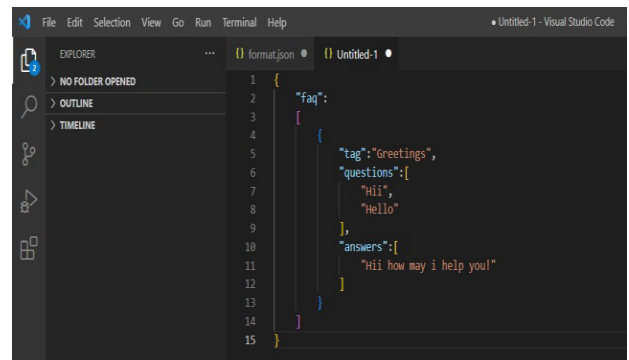
Figure 2: JSON data format

IV. Proposed System

A. Classification of Questions

There are two types of questions that users submit through web applications: Transactional questions and FAQ-questions.

Frequently Asked Questions [FAQ] are the often-cited inquiries and responses, each asked in a certain setting. These queries may be answered by BOT without any more inquiry. What is the cost of computer engineering, for instance? The answer to this query is "fee of computer engineering," thus no further explanation/questions.

Transactional questions are described as "Based on your most recent experience" questions, which refer to how well a machine learning model can respond to a relevant topic.

B. Voice commands

There is a manual voice button available to speak orders to the bot. For each voice command in manual mode, the user will need to engage with the BOT. A user will enter a command, and the bot will respond and then stop. The user must once more push the voice command button if

he wishes to ask another inquiry.

Speech recognition: Speech recognition enables BOT to understand spoken words and sentences and translate them into a machine-readable format. When a user provides input through the system's microphone, such as voice commands (such as "What is the address of the college"), speech recognition is employed.

C. Read Aloud

The read aloud feature allows the user to listen to the answer provided by the bot in text form. In terms of accessibility, this capability is extremely beneficial.

V. Conclusion

To demonstrate the usefulness and viability of the suggested method, tests were successfully completed. For everyone, it essentially cuts down on paperwork, labor, and time. Any institution or university will frequently use chat bots on its website to improve the accessibility. The intended model was correctly built, producing the anticipated results. The idea of pattern matching was the key to getting the model to predict outcomes as intended. The bot also provides and receives replies in audio format, which increases user accessibility. Work on the data is necessary for the model to be stable. The outcome is directly visible on the model the more stable the data that is supplied is. Therefore, the data is essential for creating a reliable chatbot. Administrators may access this data in the backend to analyze the kind of queries asked and, if necessary, enhance the answers.

VI. Future Scope

In the world of computer science, chatbot research is a constantly growing topic of study. If there are any input errors brought on by human spoken language, such as a grammatical or context issue, bots nevertheless occasionally struggle to grasp what is being requested. The chatbot that is now being used has all the necessary functions, but it may still be enhanced in the future by adding other features, such as time-based greetings from the bot. Support for multi-language queries would be an extremely useful and game-changing addition.

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14th - 15th June 2023

CONFERENCE PROCEEDINGS

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June 14, 15 2023

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Patient Monitoring System

Aditi Somnath Chumbhale 1, Shraddha Kailas Ahire 2, Siddhi Sharad Kasar 3, and Srushti Shamrao Deore 4

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Abstract. This project is an attempt to construct a working version of a pulse oximeter from a relatively cheap set of parts – including a microcontroller. An off the-shelf microcontroller has enough processing power to perform the tasks required for this design; however, in any commercial application, specialized hardware will be designed that is specifically suited to the task. Patient monitoring is one of the IoT application to monitor the patient health status. Internet of things makes medical equipment's more efficient by allowing real time monitoring of health. Using IoT doctor can continuously monitor the patient's on his smart phone. Pulse oximeters have been used in medical settings for many years. In many cases, such as during an operation, in intensive care, the emergency room, even an unpressurized aircraft, a person's oxygen level may be unstable and needs monitoring. In addition, from these readings, the person's heart rate can also be determined. This project is an attempt to construct a working version of a pulse oximeter from a relatively cheap set of parts – including a microcontroller.

Keywords: Please list your keywords here. They should be separated by middots, if possible. The first letter of each keyword should be capitalized.

Software Recommendation System

Sanjana Deore, Komal Mahale, Salwa Shaikh, Zarlina Sayyed

Department Of Computer Engineering,

Guru Gobind Singh Polytechnic Nashik

Abstract. System software is software designed to provide a platform for other software. Examples of system software include operating systems like macOS, GNU/Linux, Android and Microsoft Windows, computational science software, game engines, industrial automation, and software as a service application. In contrast to system software, software that allows users to do useroriented tasks such as create text documents, play games, listen to music, or browse the web are collectively referred to as application software. Software developers must interact with large amounts of different types of information and perform many different activities to build a software system. To ease the finding of information and hone workflows, there has been growing interest in building recommenders that are intended to help software developers work more effectively. Building an effective recommender requires a deep understanding of the problem that is the target of a recommender, analysis of different aspects of the approach taken to perform the recommendations and design and evaluation of the mechanisms used to present recommendations to a developer. Keywords: macOS, software, programming, OS, web browser. System software is software designed to provide a platform for other software. Examples of system software include operating systems like macOS, GNU/Linux, Android and Microsoft Windows, computational science software, game engines, industrial automation, and software as a service application. In contrast to system software, software that allows users to do useroriented tasks such as create text documents, play games, listen to music, or browse the web are collectively referred to as application software. Software developers must interact with large amounts of different types of information and perform many different activities to build a software system. To ease the finding of information and hone workflows, there has been growing interest in building recommenders that are intended to help software developers work more effectively. Building an effective recommender requires a deep understanding of the problem that is the target of a recommender, analysis of different aspects of the approach taken to perform the recommendations and design and evaluation of the mechanisms used to present recommendations to a developer. Keywords: macOS, software, programming, OS, web browser. System software is software designed to provide a platform for other software. Examples of system software include operating systems like macOS, GNU/Linux, Android and Microsoft Windows, computational science software, game engines, industrial automation, and software as a service application. In contrast to system software, software that allows users to do useroriented tasks such as create text documents, play games, listen to music, or browse the web are collectively referred to as application software. Software developers must interact with large amounts of different types of information and perform many different activities to build a software system. To ease the finding of information and hone workflows, there has been growing interest in building recommenders that are intended to help software developers work more effectively. Building an effective recommender requires a deep understanding of the problem that is the target of a recommender, analysis of different aspects of the approach taken to perform the recommendations and design and evaluation of the mechanisms used to present recommendations to a developer.

Keywords: macOS, software, programming, OS, web browser.

College Enquiry chat-bot using NLP

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Abstract: Today's world has greater artificial intelligence (AI) technology, which everyone is embracing for personal growth and to reduce manual labour. One of the finest applications of AI/ML technology is chatbots. Chat bots are sophisticated software programs that can understand user-generated queries and answer to such queries in a very human-like manner. New students encounter several challenges during the admissions process. A chatbot is used so that students may ask questions and receive responses without having to

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be physically present. The accuracy of the response depends on how well the question was phrased. The specified chatbot allows users to access voice to text, and vice versa.

Increasing the strength of concrete using Glass Fibre

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Abstract :Concrete without reinforcement is brittle which is intensified in high strength concrete. Fibres have been utilized to improve the tensile and bending performance of concrete. Fibres primarily control the propagation of cracks and limit the crack width. Glass fibre reinforced concretes are reliable structural materials with superior performance characteristics compared to conventional concrete. The main advantage of using Glass Fibre is its heals the cracks formed in concrete and provides good tensile strength. The addition of Glass fibre in concrete has been found to improve several properties, primarily cracking resistance, ductility and fatigue life. In the present study durability properties of high strength concrete (M25) reinforced with different percentage of Glass fibre are studied. The percentage of fibre taken are 0.0%, 10%, 20%, 30%.

Smart Dustbin using Arduino with GSM Module

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Abstract: The main objective of the project is to design a smart dustbin which will help in keeping our environment clean and also ecofriendly. We are inspired from Swaach Bharat Mission. Nowadays technologies are getting smarter day-by-day so, as to clean the environment we are designing a smart dustbin by using Arduino. This smart dustbin management system is built on the microcontroller based system having ultrasonic sensors on the dustbin. If dustbin is not maintained than these can cause an unhealthy environment and can cause pollute that affect our health. In this proposed technology we have designed a smart dustbin using ARDUINO UNO, along with ultrasonic sensor, servo motor, and battery jumper wire. After all hardware and software connection, now Smart Dustbin program will be run. Dustbin lid will when someone comes near at some range than wait for user to put garbage and close it. It's properly running or not. For social it will help toward health and hygiene, for business for we try to make it affordable to many as many possible. So that normal people to rich people can take benefit from it.

AUTOMATIC ROOM LIGHT CONTROLLER WITH BIDIRECTIONAL VISITOR COUNTER

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Prof. G. G. Overikar, Faculty, Dept. of E&TC, Government Polytechnic Osmanabad

Abstract: This project involves the installation and designed by using the logic trainer EES 2001 to provide the automatic control for the room light, count the visitors and to avoided the crowdy places.This project is very useful in houses, seminar halls, institutions etc to avoid congestion and save electricity that can be utilized for another microcontroller (AT89S52) acted as a heart of the whole circuit and allowed dynamic and faster control for all functions.In this competitive world and busy schedule routine, switching off lights, is often negligible, when even there is no need of light. "he designed circuit consisted of two IR"ransmitter-eceiver pairs Initially the light is switched off but as the person entered into the room; the receiver of first IR sensor pair identified the person and then it will send the signals tomicro controller. In response, microcontroller will switched on the room light.'hereas, when anyone left the room, another pair of IR sensor will send the signals to the microcontroller to switch off the room light. The seven segment display showed the total number of visitors that entered or left the room.

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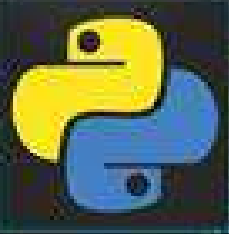
- Important Q & A for In Sem & End Sem.
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