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SILVER JUBILEE EDITION

TECHMAG

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SILVER JUBILEE

GUESTS OF YEAR

Shri.N.R.Narayana Murthy, Founder Infosys visited and addressed students of GMRIT on 18.12.2022. faculty and students of GMRIT are appreciated for their performance.

SHRI N.R.NARAYANA MURTHY

Prof.Hemachandra Reddy, is the Guest of Honour for the 7th Graduation Day which was held on 27th July 2022.

PROF. HEMACHANDRA REDDY

Shri. Amitabh Kant, Former CEO of the NITI Aayog was the Chief Guest for the 7th Graduation Day which was held on 27th July 2022.

SHRI. AMITABH KANTH

SILVER JUBILEE

GUESTS OF YEAR

Former Vice President of India Shri Venkaiah Naidu visited the campus on 18th April 2023 and addressed the staff and students.

SHRI M.VENKAIAH NAIDU

Shri Augustin de Romanet, Chairman Groupe ADP visited GMRIT on 24th Feb 2023.

SHRI AUGUSTIN DE ROMANET

Dr.S.Chandrasekhar Secretary, DST, New Delhi was the Chief Guest for Graduation Day Ceremony for the year 2023 which was held on 11th June 2023.

DR.S.CHANDHRA SEKHAR

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MESSAGE FROM DIRECTOR

Dr.J.Girish
CHAIRMAN, GOVERNING COUNCIL, GMRIT
DIRECTOR EDUCATION, GMRVF

It gives me an immense pleasure to present TECHMAG 2K23 brought out by the students of GMR Institute of Technology. The magazine covers the focused research areas of the students from various branches of engineering under the guidance of distinguished faculty members. It helps the junior students to know about the emerging areas in science and technology and thereby choosing minor and major projects.

It enables the students to choose and interact with the faculty members based on their areas of interest as their guide. I am happy to mention that the areas covered are extensive and various emerging fields like real-time multi-disease prediction by using deep learning techniques, MIMO antenna for 5G applications, pantographs, smart water supply system, metal matrix composites through powder metallurgy, synthesis of hydroxyapatite from Labeo Rohita fish scale for Biomedical applications etc.The magazine articles illustrate the agility of GMRIT students and distinctiveness of faculty members for guiding the students to learn and become expertise in the niche areas.I congratulate the editor, student coordinators and faculty members for bringing up this excellent magazine. I appreciate all students who have contributed their articles.

MESSAGE FROM PRINCIPAL

Dr.C.L.V.R.S.V.PRASAD
PRINCIPAL,GMRIT

TECHMAG is a technical annual student's magazine with a prime objective of creating a platform to share and bring out innovations in the Technology among the peers. I am very glad to share that GMRIT keeping up its tradition is bringing its Silver Jubilee edition of "TECHMAG" for the year 2022-33.

Innovative skills need to be nurtured among young engineers to provide technical solutions for the sustainability and development of society. Targeting this TECHMAG allows young talents to exchange novel ideas and global trends in the technological arena in the form of articles.

I am greatly impressed that since its inception in 1997, GMRIT is stiving hard in providing an enabling environment contributing to the development of innovative and technical writing skills. I convey my best wishes to the editorial board and the students who have contributed to this Silver Jubilee addition of TECHMAG.

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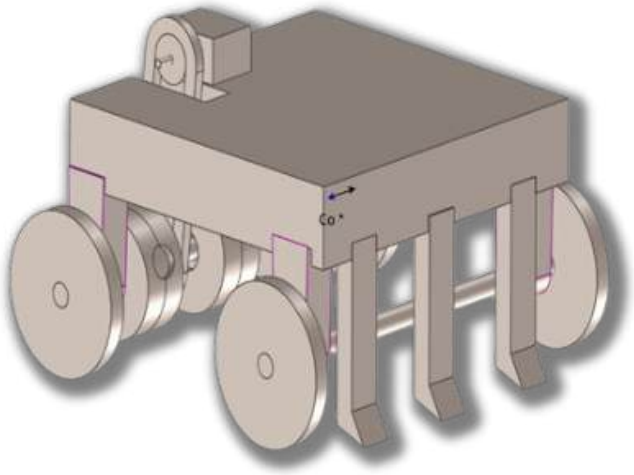

Figure 1: Multipurpose agriculture machine model

INTRODUCTION :

Agriculture is one of the important sectors in India. It is also the backbone of India, and it contributes so much to the Indian economy, and it will continue for a long period of time. This year, India ranks second worldwide in the agricultural sector. Agriculture is nothing but the science and art of farming, including cultivating the soil, producing crops etc. The population is continuously increasing, and crop production also has to increase. This can be done by using multipurpose machines to save time and money. In India, the availability of skilled labor, water resources, and crop monitoring is affecting the agriculture field, so to overcome this special-purpose machines have to be used. Some of the major problems in Indian agriculture are high investments, lack of water resources & crop monitoring, land droughting, human & animal efforts and less probability of profit.To overcome such adversity, crop cultivation should be fast so that they can produce more yield. By human & animal efforts, it will take so much time. Usage of machines could speed up the cultivation process and reduce farmer efforts. The vehicles are being developed for the processes for ploughing, seed sowing, and levelling. It is also useful to improve our economy because 80% of people depend on the farm. Therefore to meet the need of people, it is essential to increase the agricultural productivity.

Indian economy is Agro based, and Agro is fully dependent on weather. So to meet need of food grain, we have to use fertilizers, hybrids seeds, and various types of machines to take more yield from the available land. Accordingly, the machine for multiple agricultural operations is developed.

METHODOLOGY :

The multipurpose agriculture machine is designed with the help of Iron Cad software. The length of the rear shaft and the front shaft is 12 cm, having a diameter of 3cm of seeding sowing shaft and 3cm of front axle. The length of the shaft support is 10 cm. Different types of blocks, cylinders, and hollow shafts were used in the cad model design. Different types of materials were used to develop and fabricate of agriculture machine, which are wooden shaped cylinders, steel pipes, plywood material for basement motor and seed hopper unit and the battery were placed on the plywood piece. The rolling-type bearing was used for the rotation of axle shafts. The bearings are made of alloy steel, and supports are wooden pieces. Agricultural machinery relates to the mechanical structures and devices used in farming or other agriculture. The seeding mechanism is made up of wood. The circular wheels for the seeding purpose is manufactured by using the lathe machine.The support wheels for the seeding is also done by using the lathe.

After manufacturing the seeding mechanism, the supports for the axles are manufactured by using a simple cutting operation and holes for axles and bearings are provided with a radial drilling machine. The completion of the supports is done assembly of the supports with the axle is completed. Then the whole assembly part is fixed to the frame with the nails. After fixing the frame, the motor is fixed on the frame for driving the rear axle with the drive mechanism. The front portion of the frame is provided with the ploughs. The connection for automation is given with the Bluetooth module, and a lead acid battery is used for the connection. Then the Bluetooth module is connected to the mobile, and the hopper is attached to the top rear axle and seeds are filled on the hopper. Then, the machine is ready for the purpose of agriculture.

Figure 2: Multipurpose agriculture machine prototype

Then the whole assembly part is fixed to the frame with the nails. After fixing the frame, the motor is fixed on the frame for driving the rear axle with the drive mechanism. The front portion of the frame is provided with the ploughs. The connection for automation is given with the Bluetooth module, and a lead acid battery is used for the connection. Then the Bluetooth module is connected to the mobile, and the hopper is attached to the top rear axle and seeds are filled on the hopper. Then, the machine is ready for the purpose of agriculture.

CONCLUSION :

The multipurpose agricultural machine is very useful for small landholders. This machine requires less manpower and less time compared to other machines.

Based on the overall performance of the machine, it can be concluded that the project will satisfy the need of small-scale farmers because they cannot purchase costly agricultural equipment such as tractors and farming machinery. The vehicle has been fabricated successfully and implemented in agriculture by combining many ideas from various fields of agriculture to improve the yield by reducing labour effort and expenses.

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DEVELOPMENT OF LOW-COST WIND TURBINE MODEL

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INTRODUCTION :

Nowadays the usage of vehicles is increasing rapidly as the population in the world is increasing day by day. Most people are using cars which run on fossil fuels for their transportation purpose. But usage of fossil fuels emits a large number of emissions. These emissions pollute the environment rapidly. To reduce pollution, an alternative vehicle should be used. Electric vehicles are grabbing the attention of researchers because they emit less emissions as compared to others. Electrical vehicles run by using electricity. A battery is used to deliver the required electricity. Currently, lithium-ion batteries are being used.But the major drawback of EVs is they permit short ranges due to less battery capacity. So much research are conducted on EVs to increase their battery capacity as well as their travelling range. Using wind turbines to charge the battery while the vehicle is in motion is one solution to improve the travelling range of EVs.

Wind turbines use wind available around the car while the vehicle is moving and generates electricity. This electricity is used to charge the battery of the EV; hence the vehicle can travel more distance. Wind energy is renewable energy, and it is freely available around the vehicle while moving. It is eco-friendly, and its usage does not affect the environment. Wind turbines have been explored as a potential solution to increase the range of EVs and reduce their reliance on grid charging.

Figure 1 : Design of Electric vehicle with wind turbine

METHODOLOGY :

The turbine blades are designed to capture the kinetic energy of the wind and convert it into rotational energy. The rotational energy of the turbine is transferred to a generator, which converts it into electrical energy. The electrical energy is then sent to a charge controller, which regulates the amount of power going into the car's battery. The battery stores the electrical energy generated by the turbine and releases it as needed to power the car's electrical systems. It involves the use of small wind turbines to generate electricity for electric vehicles. The idea is to install small wind turbines on the roof or body of an electric vehicle to generate electricity that can be used to power the vehicle. This approach is seen as a potential solution to the problem of limited range for electric vehicles, as it provides an additional source of energy that can help extend the vehicle's range.

Figure 2: Prototype of Electric vehicle with wind turbine

CONCLUSION :

By using renewable energy sources like wind energy to electric vehicles, it can increase the travelling range of vehicles. It can increase the capacity of batteries, and it does not require any charging stations for a long time. So the efficiency of electric vehicles will be increasing in future when compared to the present.

- The travelling range of EVs with wind turbines is improved by 10 per cent as compared to EVs without wind turbines.
- The average travelling range of EVs for 4 hours of charging is 326km, and the average travelling range of EVs with wind turbines is 345km.

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AUTOMATED DETECTION OF FRAUDULENT JOB POSTINGS USING MACHINE LEARNING

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INTRODUCTION :

Agriculture is one of the important sectors in India. It is also the backbone of India, and it contributes so much to the Indian economy, and it will continue for a long period of time. This year, India ranks second worldwide in the agricultural sector. Agriculture is nothing but the science and art of farming, including cultivating the soil, producing crops etc. The population is continuously increasing, and crop production also has to increase. This can be done by using multipurpose machines to save time and money. In India, the availability of skilled labor, water resources, and crop monitoring is affecting the agriculture field, so to overcome this special-purpose machines have to be used. Some of the major problems in Indian agriculture are high investments, lack of water resources & crop monitoring, land droughting, human & animal efforts and less probability of profit.To overcome such adversity, crop cultivation should be fast so that they can produce more yield. By human & animal efforts, it will take so much time. Usage of machines could speed up the cultivation process and reduce farmer efforts. The vehicles are being developed for the processes for ploughing, seed sowing, and levelling. It is also useful to improve our economy because 80% of people depend on the farm. Therefore to meet the need of people, it is essential to increase the agricultural productivity.

```
<class 'pandas.core.frame.DataFrame'>
RangeIndex: 17880 entries, 0 to 17879
Data columns (total 18 columns):
 #   Column           Non-Null Count  Dtype
---  ------           --------------  -----
 0   job_id           17880 non-null  int64
 1   title            17880 non-null  object
 2   location         17534 non-null  object
 3   department       6333 non-null   object
 4   salary_range     2868 non-null   object
 5   company_profile  14572 non-null  object
 6   description      17879 non-null  object
 7   requirements     15185 non-null  object
 8   benefits         10670 non-null  object
 9   telecommuting    17880 non-null  int64
 10  has_company_logo 17880 non-null  int64
```

Figure 1: The Structure of the Dataset

METHODOLOGY :

In this approach, we will be using a machine learning-based automated technique to determine whether an online job posting is fraudulent or not. We make use of Kaggle's actual or fake job prediction dataset, which includes data about jobs. Data collection allows you to keep a record of past events, which you can then use data analysis to find recurring patterns. You can build prediction models from these patterns using machine learning approaches that follow trends and forecast future changes. There are around 800 false job descriptions among the 18K in the dataset. Before we fit this, data to any classifier, we preprocess the dataset. We employ preprocessing techniques, including missing values removal, feature selection, extra space removal, and stop word removal. Using the category encoding, the dataset is being converted as a feature vector. Many classifier algorithms are adjusted using these feautre vectors. It should be emphasised that the dataset's attribute for fake servers as the target class for classification purposes. 80% of the dataset is used to train classification models, and 20% of the dataset is then used to predict accuracy of the models.

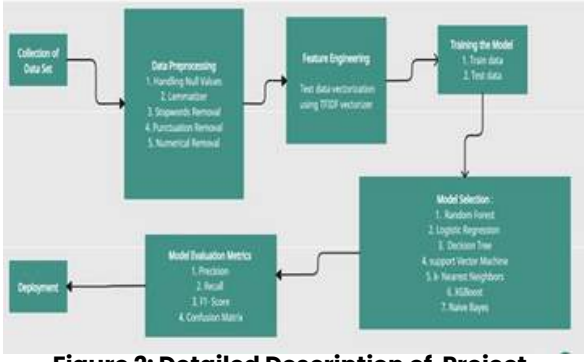

Figure 2: Detailed Description of Project.

Figure 3: Keywords in Fraudulent Job Text.

Figure 4: Keywords in Real Job Text

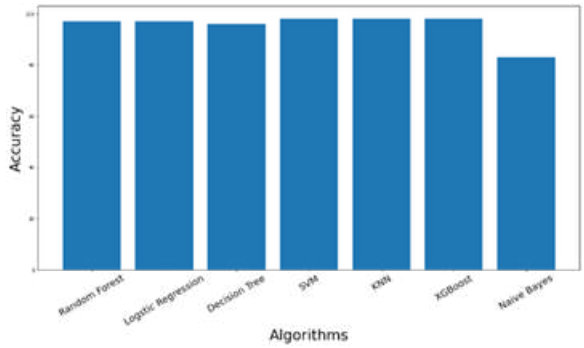

Figure 5: Accuracy comparision.

CONCLUSION :

Using the "TFIDF" NLP technique to turn the words into vectors, we will obtain the feature vectors following the pre-processing. Our independent features will be these feature vectors, and our dependent feature contains fraud and real. It takes a lot of processing resources to process these variables. These features are easy to use while still accurately and uniquely describing the underlying data collection.

From this dataset, we employ a various supervised machine learning algorithm. For building the model, we will choose a test size of 0.3, making the test data 30% of the overall dataset. Performance measures including Accuracy, F1-score, Recall, Precision, and Confusion Matrix will be measured. We employ the machine learning method that performs optimally across the board. Given that it does not take into account incorrectly anticipated cases, accuracy may not be a sufficient criterion for judging a model's performance. When a useless post is taken seriously, it causes a severe issue. As a result, compensating, false positive and false negative cases must be considered to evaluate the final performance of the model.

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EXPLORING VERSION NUMBER ATTACKS IN RPL NETWORKS: A CONTIKI SIMULATION STUDY

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INTRODUCTION :

The explosive development of the smart Internet of Things (IoT) and the widespread adoption of wireless devices have revealed new potential for development in the area such as smart cities, smart parking and Electronic Health applications.The implementation of Low power and Lossy Networks (LLN), which enable communication among pervasive devices like embedded sensors,is key to the IoT concept. The Routing Protocol for Low power and Lossy Networks (RPL) to address these limited networks.The protocol offers several routing topologies, referred to as DODAGs,constructed using various objective functions in order to improve routing based on various metrics, taking into consideration the various requirements of such networks. To guarantee an optimal topology, RPL incorporates a DODAG versioning scheme. A hacker may use this process to harm the network and shorten its life, though. In this project, proposing a detection technique that may locate malicious nodes engaged in Version Number Attack in Routing Protocol for Low power and Lossy Networks-based systems using architecture for distributed monitoring and specialized algorithms.

METHODOLOGY:

he methodology involves proposing a detection using a distributed monitoring framework with the CONTIKI-3.0 operating system. Additionally, the proposed algorithm uses metrics such as packet loss rate, delay variation, and energy consumption to detect malicious motes performing version number attacks in RPL network environments.

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In this CONTIKI-3.0 Operating System we ran Cooja tool,which is a tool for visualizing RPL Network.
Steps we followed:
1. Initially we created a simulation for RPL Network and named as Version Number Attack. csc
2. We take grid topology and displayed 20 motes on that some are malicious notes, some are normal configured motes.
3. And enabled features to observe the changes takes place in the Virtual Network.
4. Start collecting the routing packets and observations by clicking START COLLECTING
5. The data collected by the cooja simulation is grouped unto a table. This table was evaluated and studied to define Version Number Attack.
6. We can observe a change in the ranks and version numbers of the motes after simulation stopped.
7. Calculating the difference in packet delivery delay, power consumption, rate of networking speed, in the simulation with and without malicious node.
8. The results of the simulation notify us the Version Number Attack and Rank Attack behaviour in Network by analysing power consumption, average radio duty, beacon interval,historical power consumption, DAG graph, received packets per node, routingmetric, neighbour count, instantaneous powerconsumptionof Wireless Sensor Network(WSN)

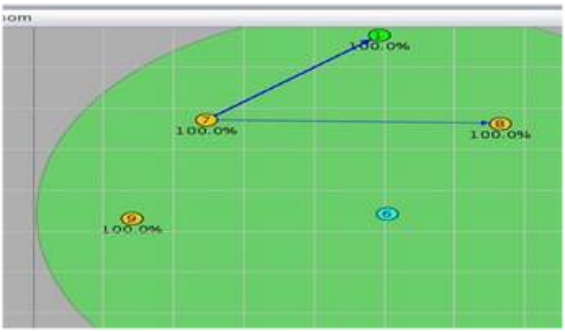

Figure 1 : WSN configuration without the malicious mote after starting the simulation.

Figure 2: WSN configuration with the malicious mote after starting the simulation(purple color : malicious node)

Simulation results

GOAL: Stating the behaviour of malicious mote through analysing features of RPL based Network like power consumption, average radio duty, beacon interval, historical power consumption, DAG graph, received packets per node, routing metric, neighbour count, instantaneous power consumption.

CONFIGURATION: This simulation results 600 seconds and is not repeated The WSN contains:

• 1 root node of type root-dummy built upon a Sky type.

• 10 sensors of type sensor-dummy built upon a Sky type.

• 1 malicious mote of type malicious increased rank built upon a Sky type.

The sensors are spread across an area of 200.0 meters side and cantered around the root node at a minimum distanceof 20.0 meters and a maximum distance of 200.0 meters.

They have a maximum transmission range of 50.0 meters and a maximum interference range of 100.0 meters.

The WSN configuration is depicted in Figures 1 and 2:

Attack behaviour compositionAC

The attack is composed of the following building blocks:

i.Power Consumption

ii.Average Radio Duty

iii.Beacon Interval

iv.Historical Power Consumption

v.DAG Graph

vi.Received Packets Per Node

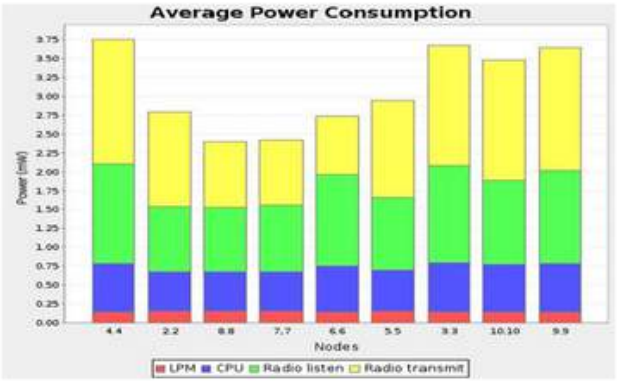

Figure 3: Average Power Consumption by root mote in WSN without malicious mote

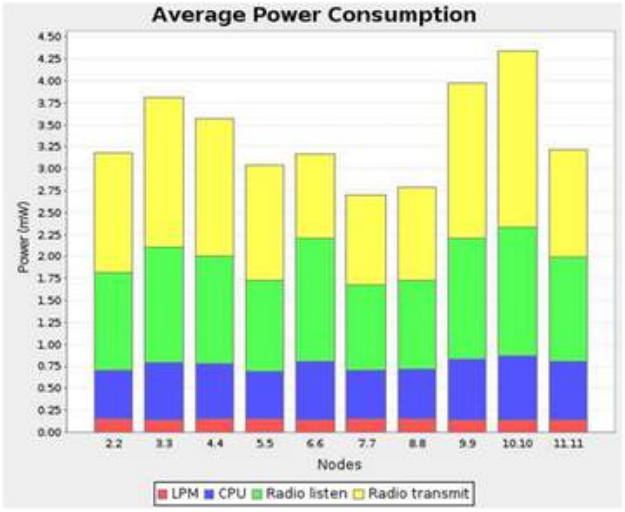

Figure 4: Average Power Consumption by root mote in WSN with malicious mote

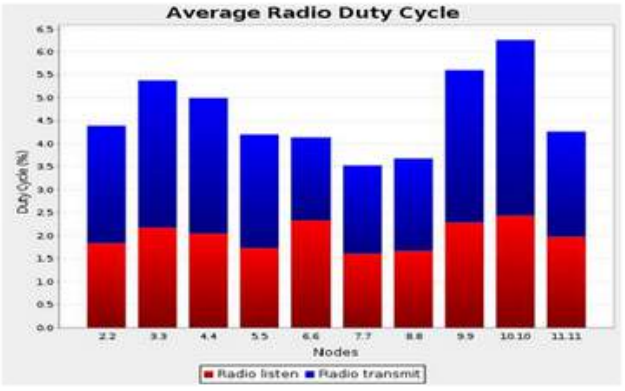

Figure 5: Average Radio Duty by root mote in WSN with malicious mote

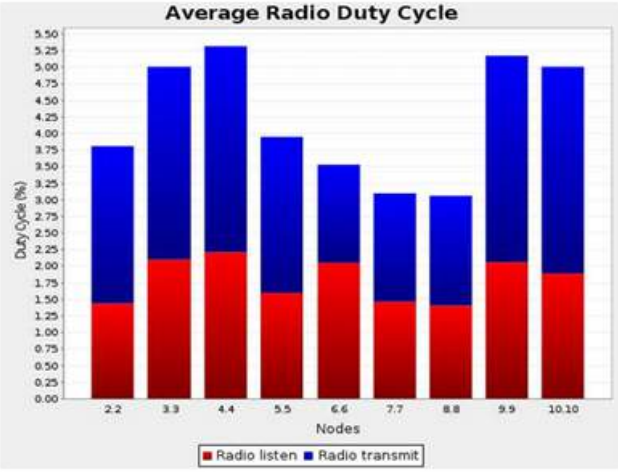

Figure 6: Average Radio Duty by root mote in WSN without malicious mote.

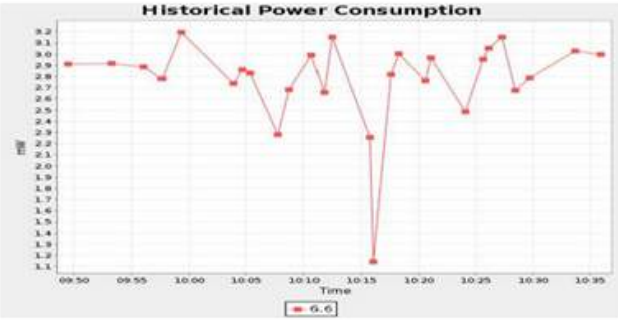

Figure 7: Beacon Interval in WSN without malicious mote

Figure 8: Beacon Interval in WSN with malicious mote

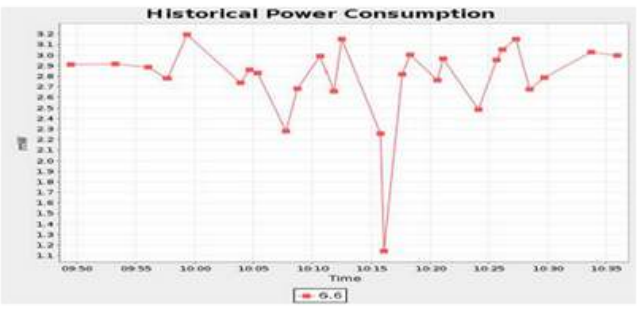

Figure 9: Historical Power Consumption in WSN without malicious mote.

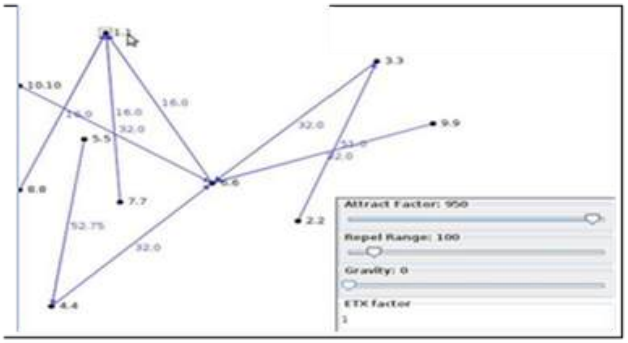

Figure 10: DODAG Graph of WSN with malicious mote

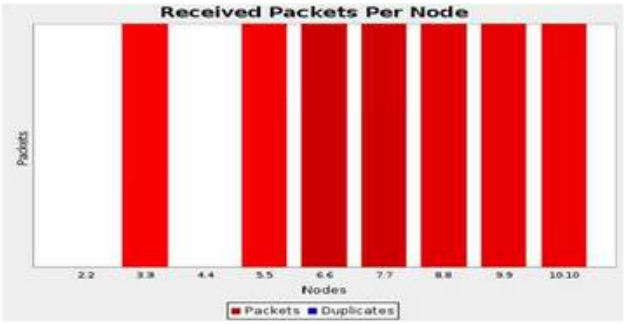

Figure 11: Received Packets Per Node in WSN without malicious mote

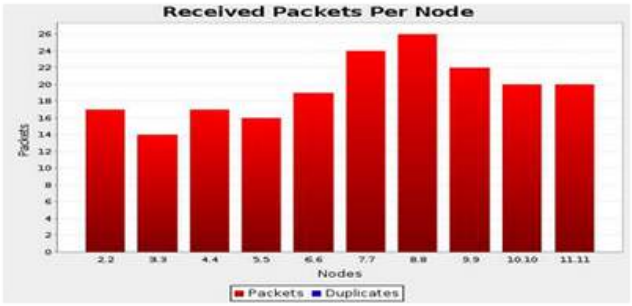

Figure 12: Received Packets Per Node in WSN with malicious mote.

CONCLUSION :

In summary, the figures are corresponds to the results for the simulation without & with the malicious mote.In this project, proposing a detection technique that may locate malicious nodes engaged in Version Number Attack in Routing Protocol for Low power and Lossy Networks-based systems using architecture for distributed monitoring and specialized algorithms.

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SKYSAVER: PREDICTING AIRLINE FARES WITH MACHINE LEARNING

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INTRODUCTION :

Nowadays, the uncertainty about the flight ticket price has become a major problem. Each service provider has their own set of regulations and ways for determining the prices. The airline, the date of travel, source, destination, route, duration, purchasing time, fuel price, etc. are few factors affecting the overall price of an airline ticket. So, it can be hard to guess the airline fares when we check it today compared to the other day. Technology can bring a solution through the implementation of Machine Learning techniques to deal with the uncertainty of future flight ticket prices by saving time and money of many customers. To Solve this problem this text proposes flight price prediction system using random forest which gives price prediction with 95% of accuracy. A customercentric application to predict the minimum flight ticket price is discussed in our proposed work.

PROPOSED SYSTEM :
Random forest is a popular machine learning algorithm that can be used to build a predictive model for flight price prediction. Here are the steps for building a random forest model for flightprice prediction:

METHODOLOGY:

A. Airlines origin and destination survey for price prediction:
1)Determine the scope of your survey: Decide which airlines, origins, and destinations you want to include in your survey. You could focus on a specific region, country, or continent, or include a wider range of options.
2)Collect data: Collect data on historical prices for flights between each origin and destination for the airlines you have selected. You can use various online travel agencies (OTAs) or airline websites to collect this information.
3)Organize data: Organize the data you have collected in a spreadsheet or database, with columns for airline, origin, destination, departure date, and price.

B.Data pre-processing of airline data for random forest:
Data Cleaning: Check for missing values and remove duplicates. Replace any missing values with a suitable value, such as the mean or median for numerical data, or the mode for categorical data.

C.Feature extraction process for airlines price prediction:
1. Exploratory Data Analysis(EDA): Perform exploratory data analysis to understand the data, visualize it and check for any patterns. It is important to explore the data to understand the distributions, identify outliers, and check for missing data.
2. Feature Engineering: Feature engineering involves creating new features based on the existing features in the data. For example, you can create a feature that calculates the time difference
1. between the departure and arrival times, or the total travel time. These new features could improve the accuracy of the predictive model.

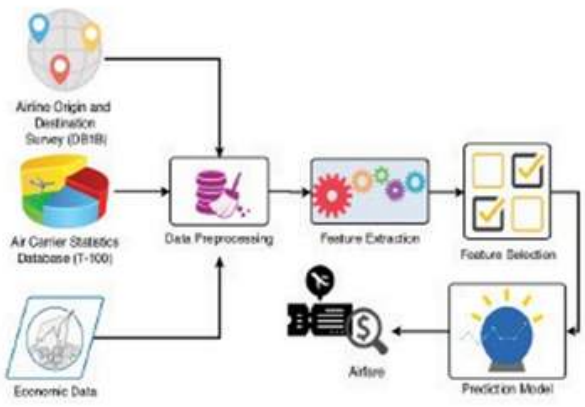

Figure 1: Airlines fare prediction Model

A. Feature selection process for airlines price prediction using random forest:
1.Feature Importance: Calculate feature importance measures from the random forest model. Random forest provides a feature importance score, which represents how much each feature contributes to the accuracy of the model. The higher the score, the more important the feature.
2.Feature Selection: Select the top n features with the highest feature importance scores as determined in the previous step. You can also use a threshold value and select features that have a feature importance score higher than the threshold.

B. Random Forest predicting model for flight price prediction:
1.Train the Model:Train a random forest model on the training data. Tune the hyperparameters of the model to optimize performance. Hyperparameters include parameters like the number of trees in the forest, the maximum depth of each tree, and the minimum number of samples required to split a node.
2.Evaluate the Model: Evaluate the performance of the trained model on the testing data. Use metrics such as mean squared error (MSE), mean absolute error (MAE), and R-squared to evaluate the model's performance.
3.Hyperparameter Tuning: If necessary, perform hyperparameter tuning to optimize the performance of the model. This can be done using techniques such as grid search or random search.4.Predictions: Once you are satisfied with the performance of the model,use it to make predictions on new data.
5.Monitor the Model: Monitor the performance of the model over time to ensure that it continues to perform well.

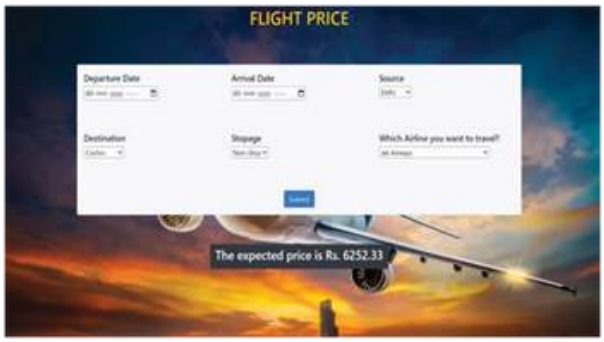

Figure 2: Price Prediction of the FlyHigh-Airlines price prediction

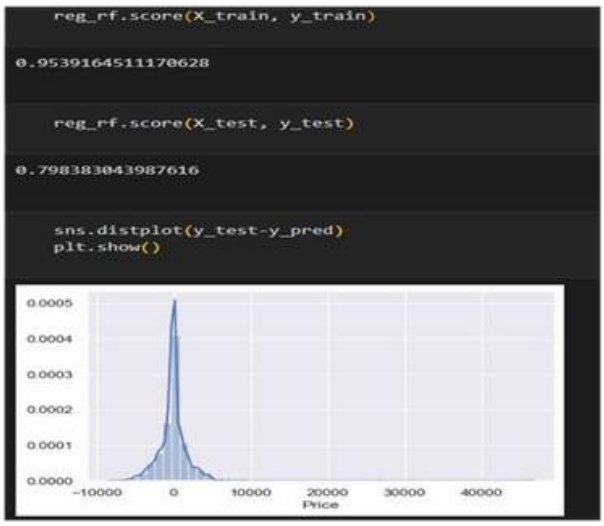

Figure 3: Accuracy rate of the Fly High-Airlines price prediction using Random Forest

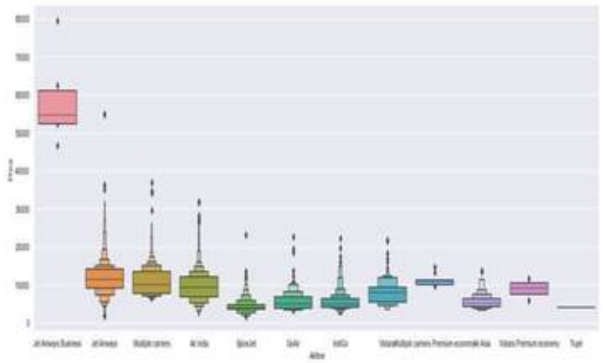

Figure 4: Dynamic effect on the prices by the flights

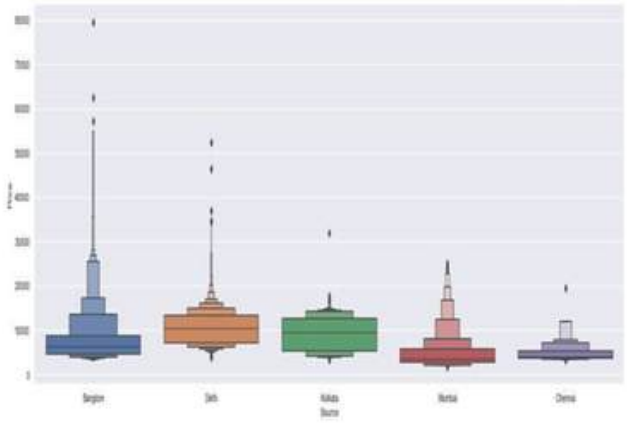

Figure 5: Dynamic effect on the prices by the cities

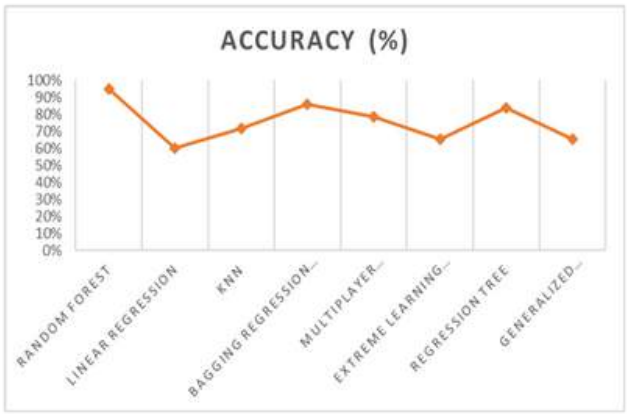

Figure 6: Comparison of Random Forest algorithm with various other machine learning algorithms in terms of Accuracy

CONCLUSION :

In conclusion, technology through the implementation of machine learning techniques can bring a solution to deal with the uncertainty of air ticket prices in the future, saving many customers time and money. To solve this problem this text proposes a flight price estimation system using random forest which provides price estimation with 95% accuracy. A customer centric application to estimate the minimum flight ticket price is discussed in our proposed work.

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PRECISION IN AQUATIC SCIENCE: DEEP LEARNING FRAMEWORK FOR FISH CLASSIFICATION

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INTRODUCTION :

The classification of fishes is becoming a challenging topic for marine biologists. In the field of fish classification, deep learning has been used to develop automated systems for accurately identifying and classifying different species of fish. This can be useful for a variety of applications, such as monitoring marine ecosystems, tracking fish populations, and enforcing fishing regulations.There are some challenges in using the existing models like CNN, MCNN models for fish classification, as there might be a loss of features during the implementation of the model and sometimes it creates more complexity However, the limitations of the existing models can be overcome using the proposed models which are based on transfer learning (i.e pretrained models). The proposed models are the deep learning models which can be an effective tool for accurately classifying fish in a variety of contexts. There are several advantages to using these models for fish classification, including their ability to automatically learn hierarchical representations of the data and their ability to handle large amounts of data efficiently, To classify fish using deep learning, a dataset of images of different fish species is typically used to train the neural network. The network is then fed an image of an unknown fish and makes a prediction as to which species it belongs to based on the patterns and features it has learned from the training dataset.

METHODOLOGY:

VGG16:
The 16 in VGG16 refers to 16 layers that have weights. In VGG16 there are thirteen convolutional layers, five Max Pooling layers, and three Dense layers which sum up to 21 layers but it has only sixteen weight layers i.e., learnable parameters layer.
•VGG16 takes input tensor size as 224, 244 with 3 RGB channel.
•To classify fish species using VGG16 we have Data Collection, Pre-processing, Transfer learning, Fine-tuning, Evaluation, Deployment

Resnet 50:

Resnet-50 contains fifty-layer deep convolutional network (8 convolutional layers, one MaxPool layer, and one average pool layer). Every layer of a ResNet is composed of several blocks. The straight line indicates that the input=output whereas the dashed line indicates that input! = output. The ResNet-50 has over 23 million trainable parameters. The first layer of Resnet-50 process convolution, batch normalization and max pooling techniques where the batch normalization is a layer that allows every layer of the network to do learning independently.It is used to normalize the output of the previous layers. The activations scale the input layer in normalization. There are 2 types of blocks used in Resnets to determine the equality of input/output dimensions: Identity block: When input to network and output of network is same then identity block is used. Convolutional block: When input to network and output of network are not same then convolutional block is used. The convolution layer is added in shortcut path to make input size=output size.

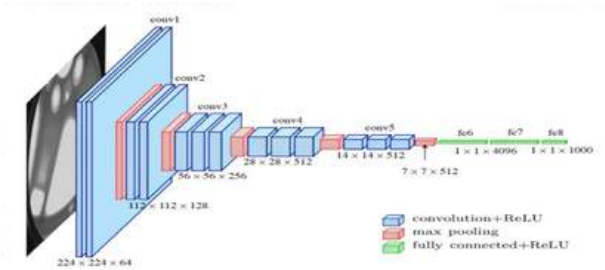

Figure 1: Model of VGG16

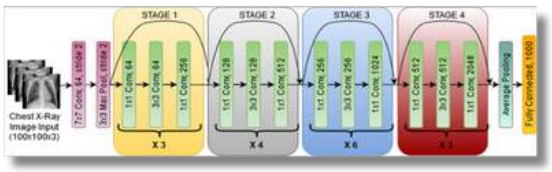

Figure 2: Architecture of VGG16

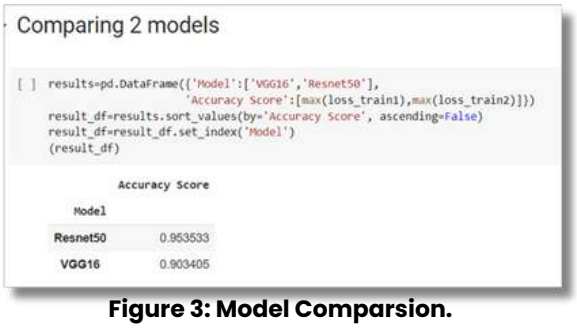

Figure 3: Model Comparsion.

CONCLUSION :

A Resnet50 and VGG16 based different fish species classification having six-step methodologies is proposed in this model. A large fish scale dataset collected from kaggle is wielded to analyze the proposed method's performance. Centered on the precision, recall, F-Measure, accuracy, execution time, and error rate, the proposed Resnet50 performance is analyzed with the prevailing CNN, VGG16. Better performance is attained by the proposed Resnet50 model. The proposed scheme achieved accuracy, precision, recall, and F1 Measure value of 97.70%, 97.80%, 97.69%, and 97.71%, respectively, which is better than prevailing methodologies. Centered on execution time and error rate, the proposed method attained better performance than the prevailing research methodologies and classified the species of fish efficiently.

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DEEP LEARNING MODELS FOR ENHANCED ABNORMAL ACTIVITY DETECTION

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INTRODUCTION :

Now a days, security plays a major role in many of the organizations like banks, offices, ATM's, restaurants etc. Surveillance cameras are commonly used in these areas. Manual detection of anomalies through these cameras requires additional security personnel, resulting in increased expenses. However, there are automated methods available to detect unusual activity in video streams. Deep learning techniques, including CNNs and GNNs, have proven effective in various domains. Recently, 3D-CAE models have been utilized for anomalous event detection. The Avenue dataset, containing normal and abnormal crowd behavior videos, is used for testing. The model's performance is evaluated based on accuracy, comparing the correctly categorized frames with the ground truths. Abnormal activity detection is the process of locating unusual occurrences, objects, or observations that are suspicious because they diverge dramatically from expected patterns or behaviours. Anomalies in data can also be referred to as outliers, noise, novelty, and exceptions. In the domain of network anomaly detection/network intrusion and abuse detection, intriguing events are frequently more uncommon than rare. For instance, sudden spikes in activity are usually noteworthy, even if they may not be picked up by many common statistical anomaly detection methods.

METHODOLOGY:

Convolutional Neural Network:
Convolutional Neural Networks (CNNs) are a type of artificial neural networks used in deep learning for analysing visual data. They are inspired by the structure of the human brain and its interconnected nodes. CNNs use weights and biases to process input through convolution layers, which help identify patterns in images. The output from the convolution layers is then passed through other layers for further analysis and classification. Sigmoid activation functions are often used in CNNs to detect and interpret images. A simple CNN typically includes an input layer, convolutional layers with activation functions, pooling layers, a fully connected layer, and a final classification layer. The convolutional and pooling layers are responsible for feature extraction, reducing the size of feature maps and preventing overfitting. The fully connected layer is used for classification, employing activation functions like sigmoid or SoftMax for binary or multiclass classification. CNNs can have multiple layers to recognize various elements in an image. Regularization techniques are applied to improve accuracy and reduce overfitting. Overall, CNNs are powerful tools for interpreting visual data and have widespread applications in object recognition, face detection, and scene analysis.

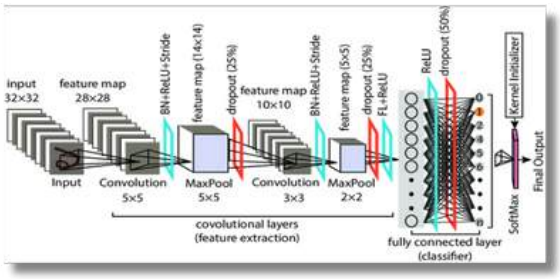

Figure 1: Convolutional Neural Network Model

Spatio-temporal feature learning:

Spatio-temporal feature learning is a method used in computer vision and deep learning to extract meaningful features from data that possess both spatial and temporal dimensions. It is particularly useful for tasks like video classification, action recognition, and object tracking. Deep neural networks, such as 3D convolutional neural networks (CNNs) or recurrent neural networks (RNNs), are commonly employed for this purpose. These networks are trained on video data to capture both the visual appearance and temporal changes in the scenes, enabling them to identify objects or activities accurately.

3D-Convolutional Autoencoder (3D CAE)

A 3D Convolutional Autoencoder (3D CAE) is a type of deep learning architecture that operates on volumetric data, such as images or video frames. The goal of the 3D CAE is to learn a low-dimensional representation of the input data, known as the encoding, that retains the important features and relationships of the data, and can be used for downstream tasks such as classification or segmentation. There are some set of the operations are present in 3D-CAE to extract the spatio and temporal features from the video frames.

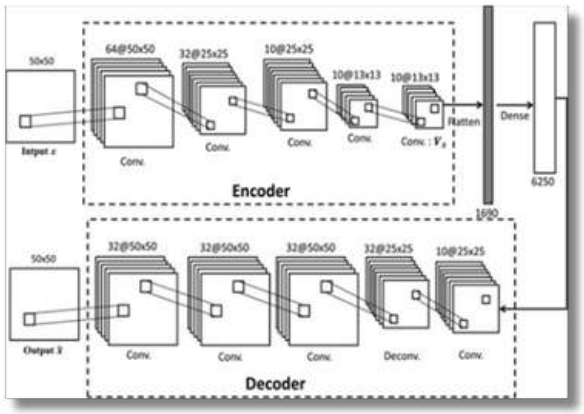

Figure 2: Encoding and Decoding

Loss value result:

Detection of an abnormal event in the provided video input should be the outcome. The phrase "Abnormal Event" appears on the screen whenever an abnormal occurrence is found in the video. The output is displayed as a normal or abnormal event by determining the reconstruction loss using the Euclidean distance between the original image and the rebuilt image. The output is detected as abnormal events if the loss exceeds the threshold value; else, it is recognized as normal video.

Figure 3: Abnormal event detection.

CONCLUSION :

This article proposes a method called Spatio-Temporal Auto Encoder for detecting anomalies in crowded situations. It utilizes 3-Dimensional Convolution Neural Networks and CNN to learn and distinguish between typical and unusual incidents. The model calculates reconstruction loss using Euclidean distance to detect anomalies. Evaluations are conducted using publicly available resources like the Avenue dataset. The application increases public safety by minimizing and managing actions based on available information. The findings demonstrate the effectiveness of the suggested method.

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HIGH-RESOLUTION BRAIN IMAGING WITH SRGAN: A NEW ERA IN MRI

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INTRODUCTION :

Imagine a world where the harmful rays of MRI scans no longer pose a threat, where waiting anxiously for long scanning times becomes a thing of the past. This article not only addresses these challenges head-on but redefines the very essence of efficiency in brain imaging. By leveraging the power of GANs, we have crafted an ingenious solution that takes low-resolution brain MRI images and elevates them to unparalleled levels of clarity and detail. Traditionally, the process of obtaining high-resolution MRI images has been both time-consuming and resource-intensive, requiring sophisticated equipment and meticulous scanning procedures. This article challenges this status quo by utilizing the incredible capabilities of GANs. With our approach, medical professionals can now capture low-resolution brain MRI images swiftly and effortlessly, knowing that our model will enhance the resolution with astonishing precision and fidelity. Medical facilities no longer need to invest in expensive and specialized equipment solely for the purpose of high-resolution imaging. This model opens the door to cost-effective alternatives, allowing hospitals and clinics to maximize efficiency without compromising on the quality of care.

As you dive deeper into the realm of the article, prepare to witness the convergence of cutting-edge technology and medical innovation. We invite you to join us on this exhilarating journey as we push the boundaries of what's possible in brain imaging. Discover how our super-resolution approach is poised to reshape the landscape of medical diagnostics, revolutionizing the way we visualize and understand the intricate complexities of the human brain.

METHODOLOGY:

SRGAN-Architecture: Where creativity meats precision

At the heart of SRGAN lies a powerful duo - the generator and the discriminator. The generator's mission is to create high-quality images from low-resolution inputs, while the discriminator's role is to differentiate between real and generated samples. Through an adversarial training process, these models engage in an artistic battle, with the generator striving to produce indistinguishable images and the discriminator aiming to accurately identify them. The result? A revolutionary approach that produces visually stunning and true-to-life brain MRI scans.

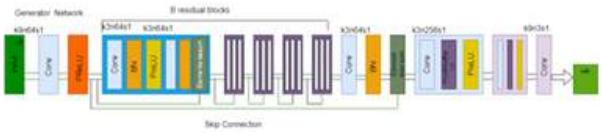

Figure 1: Architecture of Generator

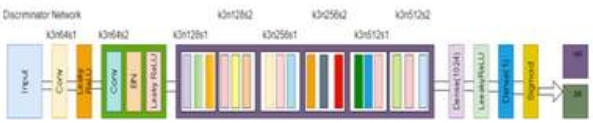

Figure 2: Architecture of Discriminator

Unveiling the workflow of SRGAN: As the generator takes the stage, it initially faces challenges in generating realistic images. However, with each iteration, it refines its abilities, producing progressively more convincing results. Meanwhile, the discriminator meticulously analyses the images, discerning the genuine from the generated. This iterative process continues until the generator achieves its peak, generating images that are visually indistinguishable from high-resolution scans. At this point, the discriminator becomes redundant, and the generator can independently produce exceptional results.

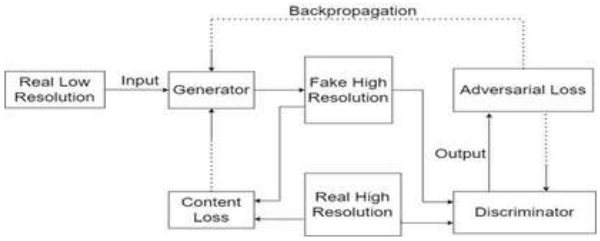

Figure 3: Flowchart of SRGAN

Loss function: Supervised super-resolution methods typically use mean squared error (MSE) loss to maximize peak signal-to-noise ratio. However, MSE focuses on individual pixel characteristics rather than visually perceptible qualities. To address this, a perceptual loss, incorporating content and adversarial losses, is used in models like SRGAN. The content loss combines MSE and VGG-based loss, while adversarial loss trains a discriminator to differentiate between high-resolution and super-resolution images. The perceptual loss balances content and adversarial components with a 1000:1 ratio, Where is content loss is adversarial loss. Metrics for Success: To gauge the effectiveness of SRGAN, two key metrics come into play: Peak Signal-to-Noise Ratio (PSNR) and Structural Similarity Index (SSIM). PSNR measures the quality of the generated images by comparing them to the ground truth high-resolution images.

The higher the PSNR value, the closer the generated image is to the original high-resolution scan. SSIM evaluates the similarity in structure and texture between the generated and high-resolution images. A higher SSIM score signifies greater resemblance and fidelity to the original image.

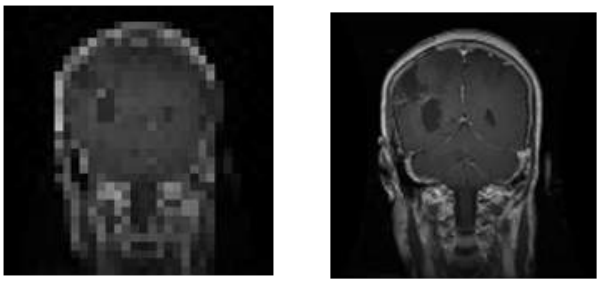

Figure 4: Low resolution & SRGAN generated image

CONCLUSION:

The realm of brain MRI resolution enhancement has witnessed a remarkable transformation with SRGAN and its utilization of GAN technology. By combining the generator's creative prowess and the discriminator's discerning eye, SRGAN pushes the boundaries of what is possible in the realm of medical imaging. With its ability to produce visually superior and detailed brain MRI scans, SRGAN promises to revolutionize the field, opening new avenues for improved diagnosis, treatment, and understanding of neurological conditions.

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COMPARATIVE STUDY OF HEAT TRANSFER IN RADIATORS WITH VARIOUS COOLANTS AND FIN DESIGNS

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INTRODUCTION :

In the present society, the effectiveness or efficiency of the radiators depends upon the fin structure and usage of nano coolant. Moreover, advancement in engine cooling systems leads to mismatched conventional liquid coolants for higher heat dissipation so that high heat transfer rate liquid coolants or nano coolants are required emergently. Nanofluids not only provide a high heat transfer rate but also provide better corrosion resistance and boiling resistance. In addition to this, nanofluids provide better anti-foam resistance and prevent deposits. A radiator is like a heat exchanger which removes heat from the engine's coolant and passes through this such that it decreases the fins' surface temperature. In our study, water and ethylene glycol have significantly less convective heat transfer, so to achieve high transfer effectiveness of, heat transfer systems are necessary. To enhance these heat transfer rates, nanoparticle additives played a crucial role to achieve this segment. Heat transfer by convection between a surface and the fluid surrounding can be increased by attaching to the surface called fins. Fins are extended surfaces designed to increase the heat transfer rate for a fixed surface temperature or lower surface temperature for a fixed heat transfer rate. Radiators are designed for maximum radiation heat output from the panels and convective heat transfer from the internal surfaces and convectors; these are called radiators. Most of the heat output is by natural convection. The forced hot water transfers its heat to the panels, which conduct the heat to the air around the radiator.

METHODOLOGY :

Three different types of automobile Radiator fin structures were designed through ANSYS Fluent software. We have taken the reference from automobile radiator manufacturing industries for considering the dimensions of the designs which we have developed. Honeycomb-type radiators are mostly used in high-end super and hypercars like alfa Romeo and Bugatti. Because of their unique characteristics like low weight, high Surface area coverage and high heat transfer rate, honeycomb-type fin designs are prominently used to increase the overall performance of the radiator. Honeycomb structures are structures that have the geometry of a honeycomb to allow the minimization of the amount of used material to reach minimal weight and minimum material cost. The geometry of the honeycomb structures varies widely. The cells are often columnar and hexagonal in shape.
A honeycomb-shaped structure provides a material with minimum density and a large surface area. In this project, we thought of combining two different types of fin designs and forming a 3-layered fin structure. So, for this purpose, we have considered a Honeycomb-Wavy-Honeycomb type fin design for our research, and we have developed a design through ANSYS fluent software, and it resulted in the design shown below,

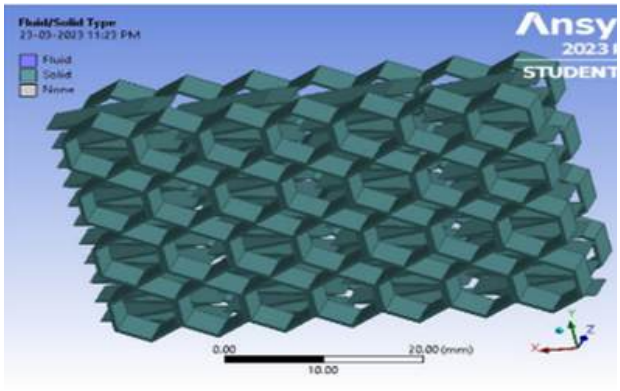

Figure 1: Wavy-Honeycomb type fin design.

CONCLUSION :

Therefore, Heat transfer through honeycomb and wavy shows more heat transfer rate.
Q (honeycomb+wavy) = 1.42Q(Honeycomb)
By performing mathematical calculations, the designed fin Structure tends to achieve more heat transfer rate than the conventional honeycomb fin design.

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ADVANTAGES AND CHALLENGES OF MIXED REALITY IN ENGINEERING EDUCATION: A REVIEW

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INTRODUCTION :

Mixed Reality (MR) is the use of both Virtual Reality (VR) and Augmented Reality (AR) technologies to create an environment where physical and virtual objects can exist and interact in real time. MR overlays images or videos over a screen showing reality through a mobile camera, smart glasses or headsets. Mixed reality is all about blending the real world with virtual reality. Unlike augmented reality, users can interact with virtual objects. At present, Mixed Reality (MR) systems are still being developed and finetuned. This technology is still not as widely available as separate VR and AR devices or software, although there are some real-world examples of mixed-reality technologies in use today.

Rather than simply reading text and studying images in the book, in a mixed reality environment, students would wear a headset that allows them to see and interact with a 3D version. Mixed reality is still a relatively new technology, and the education community is still learning the pros and cons of leveraging its capabilities in a cost-effective way for budget-minded schools and districts. The rising power of personal computers and associated hardware has led to a revolution in graphical precision, with ever more complex and realistic simulations and virtual worlds. MR will make an important contribution to education that it will allow students to directly experience environments or situations that are difficult to replicate by using traditional teaching methods such as lectures, slideshows, or 2D videos.

Rather than simply reading text and studying images in the book, in a mixed reality environment, students would wear a headset that allows them to see and interact with a 3D version. Mixed reality is still a relatively new technology, and the education community is still learning the pros and cons of leveraging its capabilities in a cost-effective way for budget-minded schools and districts. The rising power of personal computers and associated hardware has led to a revolution in graphical precision, with ever more complex and realistic simulations and virtual worlds. MR will make an important contribution to education that it will allow students to directly experience environments or situations that are difficult to replicate by using traditional teaching methods such as lectures, slideshows, or 2D videos.

MIXED REALITY BENEFITS IN ENGINEERING:

- Mixed reality technologies are being used within the education industry to both enhance students' ability to learn and take in information. It also gives the students the opportunity to personalize the way they learn.
- Mixed reality in engineering is slowly but surely becoming a game-changer, from 3D modelling and virtual sculpting to remote repair guidance and project monitoring apps. There are various ways in which the engineering sector has begun to take advantage of mixed-reality devices.

MIXED REALITY SYSTEM IN CLASSROOM:

- Interact with the environment in an immersive experience.
- Touch and manipulate objects.
- It can teach any kind of subject
- Real-time simulation of engineering processes.

This type of detailed 3D modelling + collaboration gives engineers the best chance for spotting errors while also allowing real-time manipulation of their designs

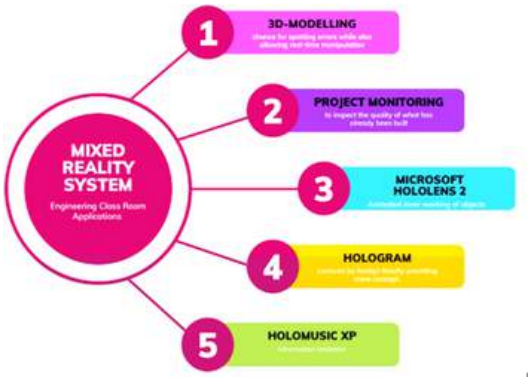

Figure 1: Applications of Mixed Reality System

CONCLUSION :

The adoption of an immersive mixed-reality system as a learning method in engineering has an enormous impact on students in the classroom.Providing head-mounted displays will ensure students explore complex subjects in a way that traditional methods cannot; likewise, students learn Automation by watching the inner working of the automobile in a digital realm.

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PATTERN ANALYSIS FOR ENHANCED BASIN AVERAGE PRECIPITATION ESTIMATION

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INTRODUCTION:

The arithmetic mean strategy should be used in areas where rainfall is evenly distributed since it gives all stations similar weight regardless of their relative location or other variables. The Thiessen approach gives the region that each station represents a weight for measuring precipitation. When orographic effects are minimal and rain gauges are not evenly distributed, it is suitable. The isohyetal approach weights the average precipitation of adjacent isohyets by the area between the isohyets after constructing con- tours of equal precipitation (isohyets) based on the observed precipitation data. Despite the fact that the Thiessen and isohyetal procedures are fairly difficult and time-consuming. Generally objective, the final outcomes depend on the methods used by the analyst, as well as on his aptitude, draughtsmanship, and familiarity with the terrain and storm features. According to Vahl, research on water balance is relevant to monthly and yearly average precipitation, but studies on flood hydrology are relevant to specific storm occurrences. The author needs to develop a novel approach to calculate the average depth of precipitation over a basin out of interest in flood hydrology. The approach should be straightforward and should produce original, repeatable results, has weighing benefits over both the Thiessen and isohyetal approaches, and is easily computerised.

Table 1: Existing solutions for areal precipitation

Method	Arithmetic Average Method	Thiessen Polygon Method	Isohyetal Method
Equation	P is the precipitations at individual station i, and n is the number of stations. $\bar{P} = \frac{1}{n}\sum_{i=1}^{n} P_i$	1.The stations are plotted on a map of the area drawn to a scale. 2.The adjoining stations are connected by the dashed lines. 3.Perpendicular bisectors are constructed on each of these dashed lines. 4.These bisectors form polygons around each station (effective area for the station within the polygon). For stations close to the boundary, the boundary lines form the closing limit of the polygons. $\bar{P} = \frac{\sum_{i=1}^{n} P_i A_i}{A}$ A is the total area of the watershed. Area of each polygon (Ai).	P = [a1(p1+p2/2)+a2(p2+p3/2)]/A Where, A=a1+a2+...+an P=precipitation a = area

METHODOLOGY :

The consideration of geographical and temporal variability of precipitation within the basin may represent a research gap in the computation of average precipitation over a basin. Although the total amount of precipitation is often divided by the number of years or months, this method does not take into consideration the geographical distribution of precipitation within the basin or any potential temporal trends.

Spatial variability: Precipitation can vary widely within a basin as a result of geography, land use, and climatic conditions, among other things. To capture the geographic variability within the basin, research may examine the use of high-resolution precipitation data, such as from weather radars or remote sensing platforms. This might entail creating statistical models or interpolation methods that take into consideration the variability of precipitation across the basin. Suppose you are studying a river basin with complex topography and varying land cover types. In this case, you could collect high-resolution precipitation data from weather radars or satellite observations. By analyzing this data, you might discover that precipitation is unevenly distributed across the basin, with higher rainfall occurring in mountainous areas and lower rainfall in the basin's plains.

To calculate the average precipitation over the entire basin, you could develop interpolation techniques that consider the spatial characteristics of the basin, such as distance from radar stations, elevation, and land cover types. This would provide a more accurate representation of the average precipitation, accounting for the spatial variability.

Temporal variability: Precipitation patterns can exhibit temporal variability, including seasonal variations, intra-annual variability, and long-term trends. A comprehensive analysis of average precipitation should consider these temporal aspects.

Research could investigate the use of time series analysis techniques, such as autoregressive integrated moving average (ARIMA) models or Fourier analysis, to capture the temporal patterns and trends in precipitation data. This would provide a more accurate representation of the average precipitation over the basinConsider a study focusing on a river basin with distinct wet and dry seasons. Instead of simply calculating the average precipitation by averaging the total rainfall across all years, you could analyze the temporal patterns within each year.

CONCLUSION :

A storm may discharge a depth of precipitation across a region that ranges from a maximum value at one or more spots to zero at the storm's perimeter. Traditional methods for measuring liquid precipitation include tipping bucket and recording weighing rain gauges, as well as non-recording cylindrical container kinds. The above gauges all measure precipitation at a specific location. Utilising radar is another way to measure precipitation. Calculating the typical precipitation that falls on a storm-affected basin is complicated by this fluctuation. One of three methods is frequently used to determine the average depth: simple average, Thiessen polygon and isohyetal techniques.

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FLOATING STRUCTURES: A NEW SOLUTION FOR FLOOD-SUSCEPTIBLE LOCATIONS

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20341A0163-NAVEEN MADEM

INTRODUCTION:

As the climatic changes and global warning advances, there is an increasing potential for the gradually rising sea level, along with more frequent and severe hurricanes and flooding, heavy rain, and other natural disasters. New trend is been adopted for the people to live comfortably and peacefully. Architecture is used as a new method that can be adopted by the people living in a low-lying area, and helping to have an innovative idea like, using renewable sources instead of non-renewable sources, installing environmentally friendly materials for the construction of houses. Considering new technologies to have proper dimensions in the construction of the houses. In the foreign countries, many new ideas and methods are installed to develop the floating houses. Considering the climatic conditions in that particular places and considering the dimensions we should adopt the materials in the construction.

Figure 1: Typical floating structures

I. Designing Of Floating Structures

A. Adopted Technologies

It was an attempt made to design a floating house at low cost, which are suitable for people in low lying area. In engineering point of view, house should be stable and durable house which was found to be CI-sheets and angle bar. Ex: bamboo.
This house could be used all round year as a permanent address for landless people. It is not only house boat but a house to float. Dutch technology consists of floating concrete container that can be used a lower level/cellar. Canadian technology consists of square container turned upside down and filled with poly styrene, an unsinkable structure. Main material used in this is fine finished timber which can be used as floating material than other structure for boats, which can be stable and durable at low cost.
Drums are used to continue the floating structure to maintain complete balance. Local materials are used for construction of floating houses, which can be affordable by a middle-class family. Material used must be locally available, durability of these and stabilize the structure different types of material are chosen for estimation of design float house.Floating body such as drums and boats are considered and find out economical and durable.

Figure 2: Floating Structure in Dutch and Canada countries

A.Materials Used For Floating Structures

B.1.Concrete pontoons

Concrete pontoons stand out in contradistinction to other pontoons for its firmness and imperishability. The concrete pontoons are filled with foam plastic which is then covered from all sides with concrete. The pontoons made up of concrete are designed to last for 40-50 years when compared with the pontoons which are lighter in weight and are made up of wood, for its functioning in harsh environmental conditions. The pontoons constructed from concrete and Styrofoam achieves a high degree of buoyancy along with high degree of stability thus making it practically unsinkable. The constructed pontoon structure has negligible effect on the built environment as well as on the aquatic life and has low to zero maintenance.

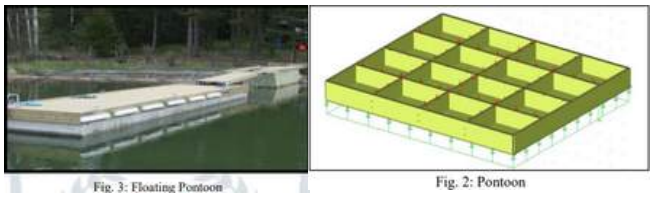

Figure 3: Concrete pontoons

The most important thing for a floating structure is the weight of the construction. The buoyant force or lift capacity of the pontoon must be one-third higher than the weight of the structure above it for the stability of the entire structure. This weight must also include the self-weight of the pontoon. The structure constructed above the pontoon is almost half the weight of the pontoon.

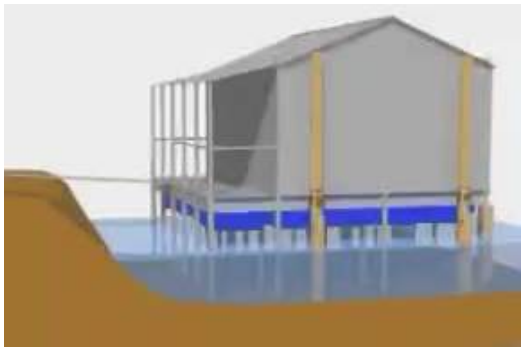

Figure 4: House model with pontoons

B.2 Reinforced concrete pontoons

The attacks by wind-waves to a floating house on a post-mining lake flooded with water almost completely. Yet the dynamic loading of the concrete is not the only. reason for the damage. Above all things a low level of the ph-value causes a strong corrosion. Investigations for new concrete formulations and innovative composition of concrete are underway.

B.3. Steel pontoons

Steel pontoons must be overcoated with an additional surfacing of a high quality. Of course, this is necessary if it is planned to put the pontoons into post-mining lakes with a pH-value measured according to figure.

Figure 5: Working of steel pontoons

A.Objectives of Floating Structures

C.1. Mitigation of climate change induced loss and damage

Climate change is an important phenomenon that induces loss and damage in different dimensions. There are certain types of efforts for managing loss & damage which has long term environmental or social consequences. The floating house concept is an effort and approach towards tackling the water related hazards like the flood in a sustainable way and thus contributing towards reducing the greenhouse emission through different innovative techniques:

1. Reduction towards the exposure of water related hazards
2. Minimum level of residual impact on the environment
3. Maximizing the potential for compilatory or the double benefit from adaption and migration.

C.2. Implementation of reduce, reuse and recyclable potential in the floating house design

The 3R strategy is a sustainable way of managing the waste and the resource value of materials can be fully utilized in the process. 3R strategy is very useful, ex rainwater harvest is stored and reused as water supply for vegetation and animals present and that water can be filtered and used as drinking water, daily usage for household purposes.

C.3. Self-economic hub for livelihood support and income generation through food production

As already mentioned, that hazards like floods have a disastrous and detrimental impact on economical, physical and psychological condition of the affected people The house is a source of self-economic hub. Moreover, the surplus vegetables, fish and poultry can be sold in the local market and thus serve as a purpose of income generation activity for the inhabitants.

C.4. Exploration of critical resilience dimensions and ensure safety and security of the flood affected people

The temporary shelter often fails to provide the basic facilities and services to the affected people. Report shows that such temporary shelter cannot provide proper safety and security towards women and children (Brouwer, et al., 2007). Therefore, instead of a temporary shelter a permanent solution like floating house can alleviate their pains and sorrows.

C.5.Replacement of non-renewable sources by renewable sources for energy production

People suffer from electricity shortage extremely which is considered as one of the biggest crises at present. However, approximately 30% of the total populations are connected to the national electricity grid of Bangladesh (Taheruzzaman et al., 2016). People living in the village areas has access to the rural electrification grid which has very poor performance and frequently suffers from shutting down of electricity. The country has immense opportunities for implementing solar energy. The extra electricity produced can be sold to the local electrification board as well. Successful implementation of these passive energy sources can encourage other rural areas to adopt this technology and thus contribute in reducing the environmental burden.

C.6. Energy-efficient design aspects and passive strategies to reduce the environmental burden and GHG emission

The floating house is naturally ventilated. It is considered as one of the main techniques for keeping moderate temperatures in buildings specially situated in the hot dry and tropical climates. The natural ventilation can help to improve the indoor air quality through fresh air flow. Integrating the vertical vegetation is another strategy incorporated in this concept to improve the indoor and outdoor environment. Addition of vegetation on the facades will generate lower temperature during warm summer months comparatively than the conventional façades. Both of the above-mentioned strategies can reduce the energy consumption and greenhouse gas emission simultaneously.

C.7. Problems and Risks

On the other hand, there are a lot of problems due to the special environment of water and its physical and chemical properties. Some problems of floating houses and their swimming bridges are given below.The construction is subjected to stronger external loadings due to the increased attacks of wind, wind waves, driving rain, ice and solar radiation. Floating houses should be reached safely in winter time too.

Figure 6: Floating houses in cold areas

There is no problem to improve the heat insulation in the cold season in case of strong winter climate e.g., by an increased intensity of wind. But during summertime innovative solutions are necessary in order to guarantee a moderate indoor climate. The additional attacks by chemical and physical components of salts, pH-values, ions etc. and the special components of the local outdoor climate effect an intense corrosion of materials.

The microbiological growth of surfaces is a topic worldwide Owing to the improved thermal insulation of envelope parts of buildings the external surfaces tend to a natural state. Currently and in context with the investigation of floating houses by the authors the systematic measurements of algae underway.

Figure 7: Floating house affected by micro organisms

III. Analysis Of Floating Structures

A. GRAPHICAL ANALYSIS

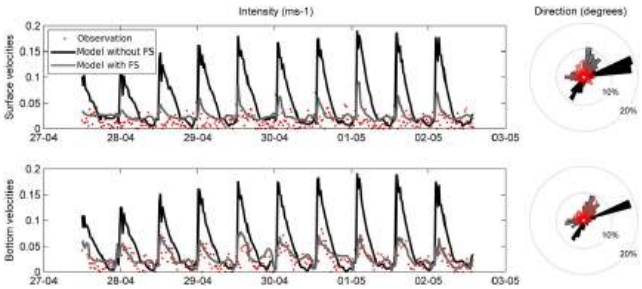

Figure 8: Effect of wave and tide

B. STABILITY ANALYSIS

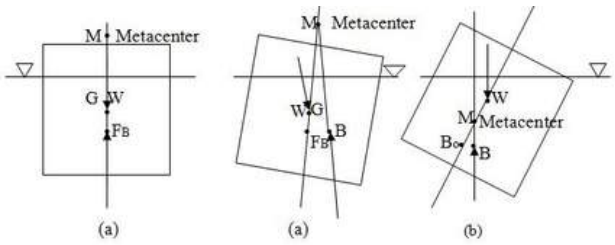

Figure 9: Stable equilibrium, M is above

CONCLUSION :

The resilience initiatives have been chosen because of their direct relevance to local needs, affordability, and ability to address multiple challenges facing households. The study also specifically seeks to enhance potential scalability through learning about the effectiveness of innovations, how they can be implemented and by designing scaling approaches. The designed floating house had been found stable from engineering point of view and it had been found economically viable if the house was constructed by locally available materials. This house has the capacity of accommodating the family members of the owner including all necessary commodities they need to live with sufficient safety and comfort during flood with internal space arrangements. If this house was constructed practically then the merits and demerits of this house may come out more basically. The designed floating house is suitable for the flood-hit areas and providing a permanent address for dwelling in a home like environment to the landless people and gypsies. Instead of drum, airtight plastic cylinder may be used to increase the durability.

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THE ROLE OF SMART GRIDS IN EFFICIENT ELECTRIC VEHICLE CHARGING

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INTRODUCTION :

Smart grid integration for electric vehicle (EV) charging refers to the coordination and optimization of charging infrastructure and the electrical grid to ensure efficient and dependable charging of EVs. To control the charging process, balance the demand for electricity, and ensure the grid's stability, new technologies and communication systems must be integrated.

The following are essential elements and ideas related to smart grid integration for EV charging:

1.Infrastructure for charging: Smart charging stations or EV supply equipment (EVSE) are spread out over a region to provide charging services for EV owners. These charging stations come with communication features and a range of charging options (such as slow, fast, and ultra-quick charging) to meet diverse EV models and charging requirements.
2.Communication and information systems: Smart grid integration enables the exchange of data between the charging infrastructure, EVs, and utility companies, relying on reliable communication networks. This includes real-time information on electricity costs, grid conditions, charging demand, and the availability of charging stations.

Figure 1: Electric vehicle and energy ecosystem

3. Demand Response: Demand response programs allow utility companies to control electricity demand during peak hours or in response to system restrictions. Applied to EV charging, demand response tactics encourage EV owners to modify their charging habits in response to grid operator signals, maintaining a balance between electricity supply and demand and preventing grid overloading.
4. V2G technology: Vehicle-to-grid (V2G) technology permits two-way power transmission between EVs and the grid. EVs can use the grid's electricity while also supplying power back to it when necessary. Besides providing financial incentives to EV owners, V2G capabilities can be used for grid stabilization, load balancing, and delivering auxiliary services to the grid.
5. Grid management and optimization: Advanced grid management systems manage the distribution of electricity to EVs using data analytics and algorithms to optimize charging schedules. These systems consider variables such as electricity demand, renewable energy production, grid capacity, and EV owners' preferred charging methods, allowing grid operators to reduce grid load and utilize resources effectively through strategic planning of charging sessions.
6. Integration with Renewable Energy Sources: A smart grid seamlessly incorporates renewable energy sources such as solar and wind power into the infrastructure for charging electric vehicles. By coordinating EV charging with renewable energy generation, the smart grid maximizes the use of clean energy and minimizes greenhouse gas emissions associated with charging operations.
7.Billing and payment systems: Smart grid integration offers various customizable billing and payment alternatives. Time-of-use rates, real-time pricing, or other specialized tariff structures can be used to charge EV owners. Payment systems and charging infrastructure can be seamlessly connected, facilitating smooth transactions and providing financial incentives to EV owners who participate in demand response initiatives or V2G services.

7.Billing and payment systems: Smart grid integration offers various customizable billing and payment alternatives. Time-of-use rates, real-time pricing, or other specialized tariff structures can be used to charge EV owners. Payment systems and charging infrastructure can be seamlessly connected, facilitating smooth transactions and providing financial incentives to EV owners who participate in demand response initiatives or V2G services.

CONCLUSION :

In summary, the advantages of EV charging on the smart grid include improved energy efficiency, decreased grid load, increased grid resilience, improved integration of renewable energy, and cost savings for EV owners. Additionally, it paves the way for upcoming innovations such as vehicle-to-home (V2H) systems, enabling EVs to power homes during blackouts or return electricity to the grid during times of high demand.

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REVIEWING THE IMPACT OF ULTRA-FAST CHARGING TECHNOLOGY ON EV ADOPTION

20341A0234-DHULIPUDI SRI SHANMUKA SUBHASH

INTRODUCTION :

In recent years, there has been a growing demand for environmentally responsible transportation options, which has contributed to the dramatic acceleration of the shift towards electric cars (EVs). However, one of the primary obstacles in the way of widespread acceptance of electric vehicles is overcoming the concerns of limited driving range and the lengthy charging periods associated with conventional charging methods. These challenges are intended to be conquered by the development of ultra-fast charging technologies, which will provide quick charging capabilities with the potential to drastically cut charging periods and considerably improve the convenience of owning an electric vehicle.

High-Power Charging Infrastructure: To provide a significant amount of electricity to the EV battery in a short period of time, ultra-fast charging requires high-power charging infrastructure. The infrastructure usually consists of robust charging stations that have high-voltage power connections, such as DC fast chargers. The charging stations are specifically designed to offer higher charging power levels than standard AC chargers, resulting in faster charging rates.

Advanced Battery Systems: Advanced battery systems are necessary to enable ultra-fast charging for electric vehicles (EVs). These systems must be capable of handling high charging rates without compromising safety or longevity. Battery systems frequently employ advanced lithium-ion battery chemistries with enhanced energy density and thermal management capabilities. These devices are designed to effectively absorb the high charging power and dissipate any heat generated during the charging process, helping to prevent overheating and potential degradation.

Innovative Charging Protocols: The development of innovative charging protocols is crucial for ultra-fast charging technologies to optimize the charging process for speed and efficiency. The protocols in place guarantee efficient communication between the charging station and the EV, enabling accurate management of the charging parameters. Some examples of these protocols are the Combined Charging System (CCS), CHAdeMO, and Tesla's Supercharger network. These protocols offer standardized techniques for high-power charging and promote compatibility between various EV models and charging networks.

Challenges and Considerations: Ultra-fast charging faces several obstacles. High-power charging requires grid infrastructure upgrades, ensuring the power system has adequate capacity and reliability to quickly charge many electric cars. Ultra-fast charging generates more heat, making thermal management crucial. Cooling systems and temperature management are critical for battery performance and durability.

Scalability: Ultra-fast charging solutions are essential for EV adoption, considering cost, production, and user experience. Manufacturers must emphasize ultra-fast charging infrastructure and affordable EVs to meet the rising demand for electric cars. Additionally, user experience should be seamless and easy, achieved through providing charging stations and streamlining payment and authentication.

CONCLUSION :

EV adoption requires ultra-fast charging. Production, cost, and user experience matter. Manufacturers must focus on ultra-fast charging facilities and affordable EVs to fulfil the expanding demand for electric vehicles. The user experience should also be smooth, achieved through charging stations and streamlined payment and authentication.

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NEXT GENERATION BATTERIES: ENHANCING PERFORMANCE AND SUSTAINABILITY

20341A0227-D.NAGASAI

INTRODUCTION :

Development and research initiatives are focused on next-generation batteries to increase their energy storage capacity, make them safer, and extend their lifespan. To this end, researchers are investigating a range of cutting-edge options. The following are noteworthy developments in the realm of next-generation batteries: solid-state batteries, lithium-air batteries, lithium-sulfur batteries, sodium-ion batteries, flow batteries, supercapacitors, and cutting-edge electrode materials. These cutting-edge methods are being employed to produce next-generation batteries with the potential for longer-lasting, safer, and more efficient battery systems through further study and technological improvements in these areas.

Types of Batteries

1. Solid-state batteries: Solid-state batteries use a solid electrolyte instead of the liquid or gel electrolytes commonly used in traditional lithium-ion batteries. This technology offers numerous benefits, such as enhanced safety, increased energy density, and an extended lifespan. Solid-state batteries provide the possibility of higher energy storage capacity, reduced risk of thermal runaway, and decreased reliance on expensive safety measures.

2.Lithium-air batteries: Lithium-air batteries are designed to use oxygen from the air to react with lithium, resulting in the generation of a robust electrical current. These batteries possess a high theoretical energy density, making them appealing for applications that demand long-term energy storage.

Despite the progress made, there are still notable technical obstacles that need to be addressed, including ensuring the stability of the battery's components and optimizing the cycling of oxygen during charge and discharge cycles for maximum efficiency.

3.Lithium-sulphur batteries: Due to their high energy density, low cost, and abundant sulfur, lithium-sulfur batteries are popular. They may outperform lithium-ion batteries in energy storage. Researchers are tackling sulfur dissolution, undesirable byproducts, and cycle life to commercialize lithium-sulfur batteries.

4.Sodium-ion batteries: Sodium-ion batteries are being considered as an alternative to lithium-ion batteries because sodium is abundant and cheap. These batteries store energy using sodium ions instead of lithium. Sodium-ion batteries have lower energy densities and shorter lifespans than lithium-ion batteries, but ongoing research aims to enhance their performance and make them suitable for grid-scale energy storage.

5.Flow batteries: Flow batteries store energy in liquid electrolytes in external tanks, making them scalable and versatile. They are ideal for large-scale energy storage applications like renewable energy grid integration. While zinc-bromine and iron-chromium chemistry are also being investigated, vanadium redox flow batteries are the most researched.

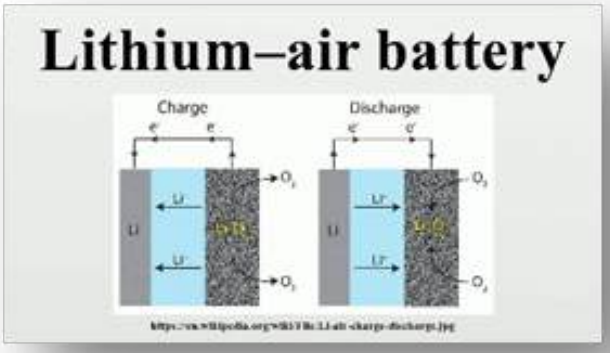

Figure 1: Lithium-air battery

6.Supercapacitors: Supercapacitors, also known as ultracapacitors, store electrical energy through the separation of charges on the surface of electrodes. They have exceptional cycle life, high-power density, and the ability to charge and discharge quickly. Although supercapacitors currently have lower energy densities compared to ordinary batteries, ongoing research focuses on building hybrid systems that combine the energy storage capacity of batteries with the power delivery capacity of supercapacitor

CONCLUSION :

As power batteries for automobiles, the energy density which basically has a direct effect to driving range is very important. But the range of EV has surpassed 600 km, such as Tesla Model S and BYD Han (information comes from respective official website). Therefore, the safety is the most critical factor and guarantee for the reliability of EVs. It is believed that hybrid cells will attract increased research interest in near future since these devices have the potential to deliver higher energy densities while maintaining higher power densities. Other type of supercapacitors to look for in near future are flexible and micro-supercapacitors whereas piezoelectric and thermally chargeable devices are at initial stages of development and require huge effort to bring them in line with currently available technology.

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ENHANCING CNN INFERENCE SPEED WITH AI-OPTIMIZED FPGAS

19341A0436-CH.KESAVA RAO

INTRODUCTION :

Convolutional neural networks (CNNs) are a type of deep learning algorithm that are used for a variety of tasks, including image classification, object detection, and natural language processing. CNNs are computationally intensive, so there is a need for efficient accelerators to run them.

FPGAs are a promising platform for CNN inference acceleration because they can be customized to the specific needs of CNN. FPGAs are also relatively power efficient, which is essential for mobile and edge devices.

The paper "HPIPE NX: Boosting CNN Inference Acceleration Performance with AI-Optimized FPGAs" introduces a new CNN accelerator architecture for FPGAs that leverages the tensor blocks in the Stratix 10 NX chip. Tensor blocks are a new type of hardware accelerator that can perform multiple multiply-accumulate operations in parallel. The authors show that their new architecture can achieve significant performance improvements over previous FPGA accelerators.The paper begins by providing an overview of CNNs and FPGAs. The authors then discuss the challenges of CNN inference acceleration on FPGAs. They argue that the tensor blocks in the Stratix 10 NX chip can be used to address these challenges.

The authors then present their new CNN accelerator architecture. The architecture is based on a layer-pipelined design. This means that the different layers of the CNN are processed in parallel. The architecture also uses the tensor blocks in the Stratix 10 NX chip to perform multiply-accumulate operations in parallel.The authors evaluate their new architecture on the Mobilenet-v1 and Mobilenet-v2 CNNs. These are two popular CNNs that are used for mobile applications.

The authors show that their new architecture can achieve throughputs of 28,541 and 29,429 images/s on Mobilenet-v1 and Mobilenet-v2 respectively. These are the highest throughputs ever reported for FPGA accelerators on these CNNs.

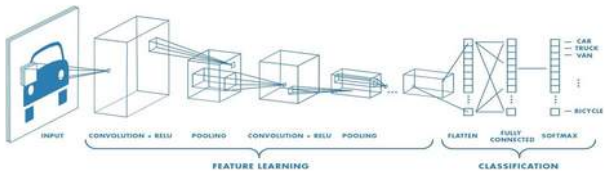

Figure 1: Simple Convolutional Neural Network

Figure 2: Applications of cloud computing

Technology and applications:

Some of the potential applications of the new architecture:

Mobile devices: The high throughput of the new architecture makes it suitable for mobile devices, where space and power are limited.

Edge devices: The new architecture could also be used in edge devices, where low latency is critical.

Cloud computing: The new architecture could also be used in cloud computing, where high throughput and scalability are required.

CONCLUSION:

The realm of brain MRI resolution enhancement has witnessed a remarkable transformation with SRGAN and its utilization of GAN technology.

By combining the generator's creative prowess and the discriminator's discerning eye, SRGAN pushes the boundaries of what is possible in the realm of medical imaging. With its ability to produce visually superior and detailed brain MRI scans, SRGAN promises to revolutionize the field, opening new avenues for improved diagnosis, treatment, and understanding of neurological conditions.

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PIONEERING THE FUTURE: ADVANCES IN AUTONOMOUS VEHICLES

20341A0440-D.NIRAJA ADITHYA

INTRODUCTION :

Autonomous vehicles, also known as self-driving cars, have emerged as a transformative technology in the realm of transportation. These vehicles utilize cutting-edge sensors, artificial intelligence algorithms, and advanced computing systems to navigate and operate without human input. With their potential to revolutionize mobility, autonomous vehicles have garnered significant attention from researchers, industry leaders, and policymakers alike. This introduction provides an overview of autonomous vehicles, highlighting their technological foundations, potential benefits, and the challenges that must be addressed for their widespread adoption.

The deployment of AVs on a large scale faces several challenges. Safety is a crucial concern, as AVs must operate safely in various conditions, including adverse weather and heavy traffic. Governments also need to establish regulations to govern the use of AVs. Additionally, public acceptance and trust in AV technology need to be fostered. The benefits of AVs are significant. They have the potential to greatly reduce traffic accidents, with estimates suggesting up to a 90% reduction. AVs could also improve fuel efficiency by around 30%, leading to reduced emissions and a more sustainable transportation system. Furthermore, AVs can enhance mobility for individuals with disabilities, providing a safe and reliable mode of transportation.

Technologies: Autonomous vehicles rely on a combination of advanced technologies to navigate and operate without human intervention. Here are some of the key technologies used in autonomous vehicles:

1. Sensors: Autonomous vehicles use a variety of sensors to perceive and understand their surroundings. These sensors include cameras, lidar (Light Detection and Ranging), radar, and ultrasonic sensors. The radar detects objects based on radio waves, and ultrasonic sensors measure distances using sound waves.

2. Computer Vision: Computer vision technology enables the vehicle to interpret visual data captured by cameras. It involves using algorithms and machine learning to identify and classify objects, detect road markings and signs, and track the movement of other vehicles, pedestrians, and obstacles.

3. GPS and Mapping: Global Positioning System (GPS) technology provides accurate positioning and navigation information to autonomous vehicles. In combination with detailed digital maps, the vehicle can determine its precise location, plan routes, and make driving decisions based on the road network and traffic conditions.

4. Control Systems: Autonomous vehicles are equipped with sophisticated control systems that interpret the data from sensors, process information from the AI algorithms, and control the vehicle's acceleration, braking, and steering
platforms.

5. Communication: Autonomous vehicles often rely on vehicle-to-vehicle (V2V) and vehicle-to-infrastructure (V2I) communication systems. These technologies enable vehicles to exchange data with other vehicles and infrastructure elements, such as traffic lights or road signs.

It's important to note that autonomous vehicle technologies are rapidly evolving, and new advancements are being made regularly. The specific technologies employed can vary among manufacturers and different autonomous vehicle platforms.

CONCLUSION :

Autonomous vehicles leverage a variety of advanced technologies such as sensors, computer vision, machine learning, GPS, control systems, and cybersecurity. These technologies enable them to detect vehicles and surroundings, determine the optimal path between destinations, and securely communicate with other vehicles. Autonomous vehicles leverage a variety of advanced technologies such as sensors, computer vision, machine learning, GPS, control systems, and cybersecurity. These technologies enable them to detect vehicles and surroundings, determine the optimal path between destinations, and securely communicate with other vehicles.

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NEXT-GENERATION INDUSTRIAL AUTOMATION: THE POWER OF WI-FI CONTROLLED ROBOTS

20341A0410-A.SAI VISHITHA

INTRODUCTION :

Industrial automation has revolutionized manufacturing processes by increasing efficiency, precision, and productivity. The integration of robotics has been a key driver in achieving automation goals, and recent advancements in wireless technology have opened up new possibilities for control and communication in industrial environments. Wi-Fi controlled robots have emerged as a promising solution, enabling seamless remote control and monitoring of robotics systems in various industrial applications. WIFI controlled robots leverage the ubiquitous presence of Wi-Fi networks to establish wireless connections between the central control system and the robotic devices. This wireless connectivity eliminates the need for physical tethers or wired connections, providing greater flexibility and mobility for industrial automation. Operators can remotely command and supervise robots from a centralized location, enabling efficient resource allocation and real-time decision-making.

Robotics Automation is a sector that is rapidly expanding. Industrial robots have become quite prevalent in sectors all around the world in recent years. Their popularity is growing every day as a result of their increased production, appropriateness, and profitability. In the industrial sector, robotics has ushered in a revolution.

As a result, we should keep an eye on what's coming next, because the robotics sector is wide, every day robots contribute to the advancement of engineering around the globe. It reduces human work and can be used in a variety of domains, including military, surveillance, and industrial pick and place. Along with people, they provide many benefits such as lower operational costs, greater safety, increased efficiency, reduced injuries, and higher output. When compared to people, robots are far faster, more precise, and can operate 24 hours a day, seven days a week. Their reputation is at an all-time high in today's world as a result of all of their skills. The holistic approach is proving to be a boon, where communication, mechanical, embedded and electronics are together creating a powerful robot with high flexibility and feasibility. The goal of this project is to create a prototype of a smartphone-controlled robot car that can perform a variety of tasks to create a robot that is both powerful and adaptable while using as little technology as possible.

TECHNOLOGY AND APPLICATIONS

Node MCU is employed as the key component in this project, with which all of the other components are interfaced. With the help of a Wi-Fi module, the developed car may be controlled wirelessly via a smartphone. When the ultrasonic sensor detects an obstruction, a notice is sent to the smartphone. To enable explosion sensing and detection, a mix of temperature, gas, and fire sensors is used. Humans can be saved from a dangerous place. It can be useful in detecting other forms of accidents where the atmosphere is very dangerous to humans, such as operating around toxic or radioactive products or the easily explorable propane tank. In industrial settings, Wi-Fi controlled robots find applications across various domains, including assembly lines, material handling, inspection, and maintenance. These robots can be equipped with specialized tools, sensors, and cameras, enabling them to perform complex tasks autonomously or under remote supervision.

CONCLUSION :

In conclusion, Wi-Fi controlled robots offer a transformative approach to industrial automation. The ability to control and monitor robots remotely through wireless connectivity enhances flexibility, productivity, and safety in manufacturing processes. Challenges in implementing Wi-Fi controlled robots for industrial automation include ensuring reliable and stable Wi-Fi connectivity in industrial environments, addressing network interference, congestion, and range limitations. Robust network planning, signal optimization, and security measures are necessary to overcome these challenges.

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AI-DRIVEN FUTURE: TRANSFORMATIVE EFFECTS ON HEALTHCARE, FINANCE, TRANSPORTATION, AND RETAIL

21341A0457-G.SAI PRASANNA

INTRODUCTION :

Artificial Intelligence (AI) is the science and engineering concerned with the computational understanding of intelligent behaviour and therefore the creation of intelligent machines. The term intelligence refers to the ability to acquire and apply different skills and knowledge to solve a given problem. In addition, intelligence is also concerned with the use of general mental capability to solve, reason, and learning various situations. Intelligence is integrated with various cognitive functions such as language, attention, planning, memory and perception. The evolution of intelligence can basically is studied about in the last ten years. Intelligence involves both Human and Artificial Intelligence. In this case, critical human intelligence is concerned with solving problems, reasoning and learning. Furthermore, humans have simple complex behaviors which they can easily learn in their entire life.

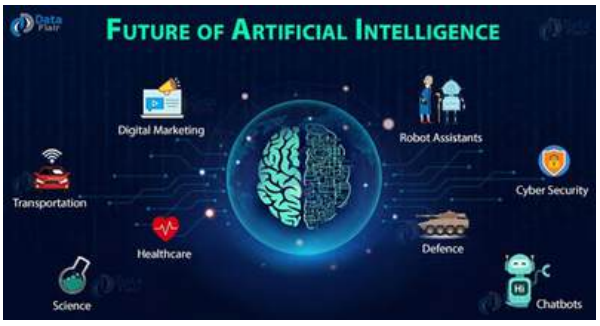

Figure 1: Future of artificial intelligence

APPLICATIONS:

Artificial Intelligence has various applications in today's society. It is becoming essential for today's time because it can solve complex problems with an efficient way in multiple industries, such as Healthcare, entertainment, finance, education, etc. AI is making our daily life more comfortable and fast.

Following are some sectors which have the application of Artificial Intelligence:

FIGURE 2 : APPLICATIONS OF AI

- **AI in Healthcare :** In the last five to ten years, AI becoming more advantageous for the healthcare industry and going to have a significant impact on this industry. Healthcare Industries are applying AI to make a better and faster diagnosis than humans. AI can help doctors with diagnoses and can inform when patients are worsening so that medical help can reach to the patient before hospitalization.
- **AI in Robotics :** Artificial Intelligence has a remarkable role in Robotics. Usually, general robots are programmed such that they can perform some repetitive task but with the help of AI we can create intelligent robots which can perform tasks with their own experiences without pre-programmed. Humanoid Robots are best examples for AI in robotics, recently the Intelligent humanoid robot named as Erica and Sophia has been developed that can talk and behave like humans.

- **AI in Gaming :** AI can be used for gaming purpose. The AI machines can play strategic games like chess, where the machine needs to think of a large number of possible places.
- **AI in Finance :** AI and finance industries are the best matches for each other. The finance industry is implementing automation, chatbot, adaptive intelligence, algorithm trading, and machine learning into financial processes.
- **AI in Data Security :** The security of data is crucial for every company and cyber-attacks are growing very rapidly in the digital world. AI can be used to make your data more safe and secure. Some examples such as AEG bot, AI2 Platform, are used to determine software bug and cyber-attacks in a better way.
- **AI in Social Media :** Social Media sites such as Facebook, Twitter, and Snapchat contain billions of user profiles, which need to be stored and managed in a very efficient way. AI can organize and manage massive amounts of data. AI can analyze lots of data to identify the latest trends, hashtag, and requirement of different users.
- **AI in Astronomy :** Artificial Intelligence can be very useful to solve complex universe problems. AI technology can be helpful for understanding the universe such as how it works, origin, etc.
- **AI in E-commerce :** AI is providing a competitive edge to the e-commerce industry, and it is becoming more demanding in the e-commerce business. AI is helping shoppers to discover associated products with recommended size, color, or even brand.
- **AI in Entertainment :** We are currently using some AI based applications in our daily life with some entertainment services such as Netflix or Amazon. With the help of ML/AI algorithms, these services show the recommendations for programs or shows.

SUMMARY:

Artificial Intelligence will revolutionize the way in which different companies across compete and grow across the world by representing a new production factor that can drive business profitability. In order to realize the opportunity of AI, most the companies in the world are already developing actively in various Artificial Intelligence strategies.In addition, they should focus on developing responsible AI systems aligned with ethical and moral values that lead to positive feedback and empower people to do what they know best such as innovation. To capitalize on this opportunity, the study identifies eight strategies for the successful implementation of AI that focuses on adopting a human-centric approach and taking innovative and responsible measures for the application of technology to companies and organizations in the world. The construction of intelligent machines in various industries presupposes the existence of symbolic structures, the ability of them to demand and the existence of knowledge (raw material). Once artificial intelligence has intelligence equal to or greater than man's, political and social change will inevitably arise, in which AI has all the advantages of gaining if it realizes that it does not need humans to colonize the universe. Recent advancement in artificial technology depicts orbiting communications satellites in the space with its 486 processors. In the future, self-replicating artificial intelligence could easily be made with all human colonies outside the earth, and the human race will never be able to fight in the empty space on equal terms.

CONCLUSION:

In this way, artificial intelligence can achieve great discoveries and advances for humanity due to its multiple possibilities. Most artificial intelligence systems have the ability to learn which allows people to improve their performance over time. The adoption of AI outside the technology sector is at an early or experimental stage. The evidence suggests that AI can provide real value to our lives. AI bases its operation on accessing huge amounts of information, processing, analyzing and according to its operation algorithms, executing tasks and to solve certain problems.

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RANKINGS

Times Higher Education
Impact Rankings 2023

OVERALL RANK 1001+ OUT OF 1591 UNIVERSITIES/INSTITUTIONS RANKED WORLDWIDE 201-300 RANK IN CLEAN WATER AND SANITATION AUG 2023.

NAAC 'A' Grade

All Departments of GMRIT Re-Accredited under Tier-1

25TH IN INDIA **3RD** IN A.P — DATA QUEST

33RD IN INDIA **2ND** IN A.P — EDUCATION WORLD

AAAA+ **2ND** IN SOUTH ZONE — CAREERS 360

188 nirf (2022)

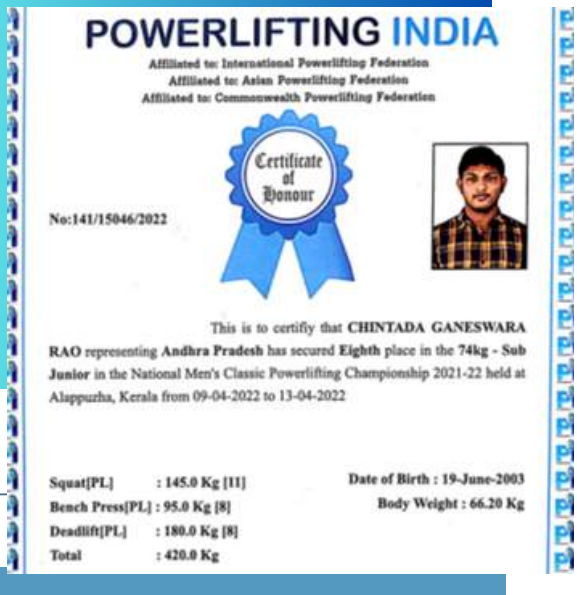
5S CERTIFICATION AWARDED TO GMR VARALAKSHMI FOUNDATION BY NATIONAL PRODUCTIVITY COUNCIL.

ACHIEVEMENTS

- Ms. Bhargavi and Mr. Surya Prakash of CSE won in UNESCO-India-Africa Hackathon 2022, held on 23rd, 24th November 2022 at Goutham Buddha University, New Delhi.

- Smt. A. Surya Kumari IAS, Honorable Collector, Vizianagaram District interacted with GMRIT students regarding "Systematic Voters Education and Electoral Participation (SVEEP)", on the occasion of National Education Day.

- Mr.Chintada Ganeswara Rao, III EEE student has secured eighth place in the 74 kg – Sub Junior in the national level Men's Classic Powerlifting Championship 2021-22 held at Alappuzha, Kerala from 09.04.2022 to 13.04.2022.


POWERLIFTING INDIA

Affiliated to: International Powerlifting Federation
Affiliated to: Asian Powerlifting Federation
Affiliated to: Commonwealth Powerlifting Federation

Certificate of Honour

No:141/15046/2022

This is to certify that CHINTADA GANESWARA RAO representing Andhra Pradesh has secured Eighth place in the 74kg - Sub Junior in the National Men's Classic Powerlifting Championship 2021-22 held at Alappuzha, Kerala from 09-04-2022 to 13-04-2022

Squat[PL] : 145.0 Kg [11]
Bench Press[PL] : 95.0 Kg [8]
Deadlift[PL] : 180.0 Kg [8]
Total : 420.0 Kg

Date of Birth : 19-June-2003
Body Weight : 66.20 Kg

- Ms. P. Deepika, final year CSE received "Best Student Influential Award by APSCHE" from the Chief Minister of A.P with cash prize of Rs.30000/-

ACHIEVEMENTS


రాజాం, న్యూస్‌టుడే: రాజాంలోని జేఎంఆర్‌ఐటీ విద్యార్థులు జి.గౌతం, సీహెచ్ గణేశ్వరరావు అంతర్ విశ్వవిద్యాలయ పవర్ లిఫ్టింగ్ పోటీలకు జేఎన్‌టీయూ కాకినాడ తరపున ఎంపిక య్యారు.

గౌతం గణేశ్వరరావు

ఈ నెల 22 నుంచి 24 వరకు పంజాబ్‌లోని గురుకాశీ విశ్వవిద్యాలయంలో నిర్వహించనున్న పోటీల్లో పాల్గొంటారని కళాశాల అధికారులు తెలిపారు. వారిని ప్రిన్సిపల్

- G.Gowtham (III Year Civil Engg) & Ch Ganeswara Rao (III Year EEE) selected for University Level in Power Lifting Competition and to participate in National level Competition at Guru Kashi University, Punjab.

- 02 Teams #Team Neural and #Data Warriors Won in Smart India Hackathon 2022 with a Cash Prize of Rs 50,000 each.

- A.G.S.Anirudh has been selected by Google as the Google Developer Student Clubs Lead of GMRIT.

- K. Sireesha, G. Vignesh, and U. Yaswanth Kumar (III Year EEE) have won the Consolation Prize in the Technical Exhibition conducted during the National Technology Day Celebrations – 2023 (9th to 11th May, 2023) at the Naval Science and Technological Laboratory, Vizag.

PLACEMENTS


GMRIT
Training Tomorrow's Engineers Today
EAPCET Code: GMRI
25
52
X3252
2022-23
COLLEGE
PLACEMENTS
95%
PLACEMENTS
40.5 LPA
HIGHEST PACKAGE
SO FAR
4.8 LPA
AVERAGE PACKAGE
80+
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SPORTS

- Mr. Chaitanya , I Year bagged bronze medal in National Sub Junior (under 18) Power Lifting Championship held at Tamil Nadu.

- P.Avyakta, II Year Mech represented Srikakulam district in State meet Ball Badminton Championship
  Dt:28-09-2022 to 3-10-2022.

- 10TH AP State Sub Junior and Junior classic Power Lifting and bench press championship Womens ,GMRIT won 5 Gold medals ,1 Silver medal and 1 Bronze medal in the Championship .

- JNTUK Power Lifting & Weight Lifting(M&W), Body Building(M) selection trails cum Inter Collegiate Tournament.

- 9th AP State Classic Power Lifting Championship 15 – 17 July 2022

- Men Junior Overall Championship State Runner Up Cup

- Women (Junior & Sub Junior) Overall Championship State Runners

ABOUT GMRIT

GMRIT is an Autonomous Engineering college established in the year 1997 by GMR Varalakshmi Foundation – the corporate social responsibility arm of GMR Group. Located in Rajam, Vizianagaram district of Andhra Pradesh, GMRIT provides its learning community state-of-the-art facilities, infrastructure, and a competent faculty.

GMRIT was ranked 188th in NIRF-2022 and ranked among the top 5 colleges in the state of Andhra Pradesh and top 50 colleges in the country by popular education magazines.The institute is accredited by both NAAC (with A grade) for the three consecutive cycle till 2025. All the UG programs are accredited by the NBA. We offer 7 UG and 6 PG programmes. GMRIT delivers quality technical education for the all-round development for aspiring engineers. With a strong belief that Academics and Research has to go hand in hand, GMRIT promotes research by organizing conferences and capacity building programs in all the emerging areas.