

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

S.NO	TITLE	Technologies
1	<p><b>Traffic Sign Board Recognition and Voice Alert System using Convolutional Neural Network</b></p> <p>To ensure a smooth and secure flow of traffic, road signs are essential. A major cause of road accidents is negligence in viewing the Traffic signboards and interpreting them incorrectly. The proposed system helps in recognizing the Traffic sign and sending a voice alert through the speaker to the driver so that he/ she may take necessary decisions. The proposed system is trained using Convolutional Neural Network (CNN) which helps in traffic sign image recognition and classification. A set of classes are defined and trained on a particular dataset to make it more accurate. The German Traffic Sign Benchmarks Dataset was used, which contains approximately 43 categories and 51,900 images of traffic signs. The accuracy of the execution is about 98.52 percent. Following the detection of the sign by the system, a voice alert is sent through the speaker which notifies the driver. The proposed system also contains a section where the vehicle driver is alerted about the traffic signs in the near proximity which helps them to be aware of what rules to follow on the route. The aim of this system is to ensure the safety of the vehicle's driver, passengers, and pedestrians.</p>	Python, Deep Learning

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2	<p><b>Detecting and Characterizing Extremist Reviewer Groups in Online Product Reviews</b></p> <p>Online commercial centers regularly witness assessment spam as surveys. Individuals are regularly employed to target explicit brands for advancing or blocking them by composing profoundly certain or negative surveys. This frequently is done by and large in gatherings. Albeit some past investigations endeavored to distinguish and examine such assessment spam gatherings, little has been investigated to detect those gatherings who focus on a brand all in all, rather than just items. In this article, we gathered the surveys from the Amazon item audit site and physically named a bunch of 923 applicant analyst gatherings. The gatherings are extricated utilizing regular itemset mining over brand likenesses with the end goal that clients are bunched together in case they have commonly assessed (results of) a ton of brands. We speculate that the idea of the analyst bunches is subject to eight elements explicit to a (bunch, brand) pair. We foster an element based directed model to arrange applicant bunches as radical substances. We run numerous classifiers for the errand of ordering a gathering dependent on the surveys composed by the clients of that gathering to decide if the gathering gives indications of furthest point. A three-layer perceptron-based classifier ends up being the best classifier. We further review practices of such gatherings exhaustively to comprehend the elements of brand-level assessment extortion better. These practices remember consistency for appraisals, audit feeling, checked buy, survey dates, and accommodating votes got on surveys. Shockingly, we see that there are a great deal of checked commentators showing outrageous opinion, which, on additional examination, prompts methods for going around the current components set up to forestall informal motivators on Amazon.</p>	Python, NLP(Natural Language Processing)
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3	<p><b>Rice Leaf Diseases Classification Using CNN With Transfer Learning</b></p> <p>Rice is one of the major cultivated crops in India which is affected by various diseases at various stages of its cultivation. It is very difficult for the farmers to manually identify these diseases accurately with their limited knowledge. Recent developments in Deep Learning show that Automatic Image Recognition systems using Convolutional Neural Network (CNN) models can be very beneficial in such problems. Since rice leaf disease image dataset is not easily available, we have created our own dataset which is small in size hence we have used Transfer Learning to develop our deep learning model. The proposed CNN architecture is based on VGG-16 and is trained and tested on the dataset collected from rice fields and the internet. The accuracy of the proposed model is 92.46%.</p>	Python, Deep Learning
4	<p><b>Diabetes Disease Prediction Using Machine Learning Algorithms</b></p> <p>This paper deals with the prediction of Diabetes Disease by performing an analysis of five supervised machine learning algorithms, i.e. K-Nearest Neighbors, Naïve Baye, Decision Tree Classifier, Random Forest and Support Vector Machine. Further, by incorporating all the present risk factors of the dataset, we have observed a stable accuracy after classifying and performing cross-validation. We managed to achieve a stable and highest accuracy of 76% with KNN classifier and remaining all other classifiers also give a stable accuracy of above 70%. We analyzed why specific Machine Learning classifiers do not yield stable and good accuracy by visualizing the training and testing accuracy and examining model overfitting and model underfitting. The main goal of this paper is to find the most optimal results in terms of accuracy and computational time for Diabetes disease prediction.</p>	Python, Machine Learning

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5	<p><b>CRIME Type and Occurrence Prediction Using Machine Learning Algorithm</b></p> <p>In this era of recent times, crime has become an evident way of making people and society under trouble. An increasing crime factor leads to an imbalance in the constituency of a country. In order to analyse and have a response ahead this type of criminal activities, it is necessary to understand the crime patterns. This study imposes one such crime pattern analysis by using crime data obtained from Kaggle open source which in turn used for the prediction of most recently occurring crimes. The major aspect of this project is to estimate which type of crime contributes the most along with time period and location where it has happened. Some machine learning algorithms such as Naïve Bayes is implied in this work in order to classify among various crime patterns and the accuracy achieved was comparatively high when compared to pre-composed works.</p>	Python, Machine Learning
6	<p><b>Red Wine Quality Prediction Using Machine Learning Techniques</b></p> <p>Nowadays people try to lead a luxurious life. They tend to use the things either for show off or for their daily basis. These days the consumption of red wine is very common to all. So it became important to analyze the quality of red wine before its consumption to preserve human health. Hence this research is a step towards the quality prediction of the red wine using its various attributes. Dataset is taken from the sources and the techniques such as Random Forest, Support Vector Machine and Naïve Bayes are applied. Various measures are calculated and the results are compared among training set and testing set and accordingly the best out of the three techniques depending on the training set results is predicted. Better results can be observed if the best features out from other techniques are extracted and merged with one another to improve the accuracy and efficiency.</p>	Python, Machine Learning

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7	<p><b>Predicting the student performance by using machine learning algorithms</b></p> <p>Student performance prediction is very important to understand a student progress rate. It is said that 'Prevention is better than the cure'. In this Research, we are trying to find out student's current status and predict his/her future results. After the outcome, teachers can give him/her proper advice to avoid the poor result and also can groom the student. By finding out the dependencies for final examinations. Which courses he/she should take in the upcoming semester (roles of adviser/teacher). Every year a lot of students lag behind because of lack of proper advice and monitoring. A teacher can't monitor each and every single student at once. If a system can help a Teacher about the students like which student needs which kind of help. Then it will be much helpful for both teachers and student. The aim is helping the student to avoid his/her predicted poor result using Artificial Intelligence. If a student could know what will be his/her result in the future and notify him/her what to do to avoid his/her the bad results by predicting the final examinations mark. This research would be helpful for the students and teachers with The highest accuracy of 94.88%.</p>	Python, Machine Learning
8	<p><b>Predicting potential drug abusers using machine learning techniques</b></p> <p>Drug abuse is a noteworthy public health problem in the world. Recently, machine learning has become a favorable tool for classification problem. In this paper, we selected three machine learning algorithms (random forest (RF), Extreme Gradient Boosting (XGBoost) and Light Gradient Boosting Machine (LightGBM) ) to predict potential abuse individuals of methamphetamine and amyl nitrite, two kinds of central stimulants, as well as users' last consumption time based on personality traits and demographic information. Compared with k-NearestNeighbor, a widely-used classification algorithm, RF, XGBoost and LightGBM have superior performance, with LightGBM being the most efficient one in predicting potential user and estimating usage time. The results of feature importance indicate neuroticism is the most important predictor of drug abuse risk.</p>	Python, Machine Learning

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9	<p><b>A Systematic Review of Predicting Elections Based on Social Media Data</b></p> <p>The way politicians communicate with the electorate and run electoral campaigns was reshaped by the emergence and popularization of contemporary social media (SM), such as Facebook, Twitter, and Instagram social networks (SNs). Due to the inherent capabilities of SM, such as the large amount of available data accessed in real time, a new research subject has emerged, focusing on using the SM data to predict election outcomes. Despite many studies conducted in the last decade, results are very controversial and many times challenged. In this context, this article aims to investigate and summarize how research on predicting elections based on the SM data has evolved since its beginning, to outline the state of both the art and the practice, and to identify research opportunities within this field. In terms of method, we performed a systematic literature review analyzing the quantity and quality of publications, the electoral context of studies, the main approaches to and characteristics of the successful studies, as well as their main strengths and challenges and compared our results with previous reviews. We identified and analyzed 83 relevant studies, and the challenges were identified in many areas such as process, sampling, modeling, performance evaluation, and scientific rigor. Main findings include the low success of the most-used approach, namely volume and sentiment analysis on Twitter, and the better results with new approaches, such as regression methods trained with traditional polls. Finally, a vision of future research on integrating advances in process definitions, modeling, and evaluation is also discussed, pointing out, among others, the need for better investigating the application of state-of-the-art machine learning approaches.</p>	Python, Machine Learning
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10	<b>Naïve Bayes Classifier for Predicting the Novel Coronavirus:</b> These days, the healthcare enterprises procure huge amount of healthcare data that most of the times is not processed to find out the hidden facts and patterns. Data mining along with machine learning performs a prominent role in predicting the diseases. Nowadays, COVID - 19 has become a pandemic for the mankind. It is a communicable disease and it takes 12 - 24 hours in receiving the reports of diagnose. In various remote and high altitude areas and due to the exponential growth of COVID - 19 in various parts of the world, it is not feasible to perform the test on mass population. This research article describes a novel technique to diagnose coronavirus using naïve bayes classifier and we hope that this technique would be useful and fruitful for the humanity and will be a great step to predict the COVID - 19.	Python, Machine Learning
11	<b>Potato Disease Detection Using Machine Learning:</b> In Bangladesh potato is one of the major crops. Potato cultivation has been very popular in Bangladesh for the last few decades. But potato production is being hampered due to some diseases which are increasing the cost of farmers in potato production. However, some potato diseases are hampering potato production that is increasing the cost of farmers. Which is disrupting the life of the farmer. An automated and rapid disease detection process to increase potato production and digitize the system. Our main goal is to diagnose potato disease using leaf pictures that we are going to do through advanced machine learning technology. This paper offers a picture that is processing and machine learning based automated systems potato leaf diseases will be identified and classified. Image processing is the best solution for detecting and analyzing these diseases. In this analysis, picture division is done more than 2034 pictures of unhealthy potato and potato's leaf, which is taken from openly accessible plant town information base and a few pre-prepared models are utilized for acknowledgment and characterization of sick and sound leaves. Among them, the program predicts with an accuracy of 99.23% in testing with 25% test data and 75% train data. Our output has shown that machine learning exceeds all existing tasks in potato disease detection.	Python, Machine Learning

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12	<p><b>Classification of Malaria-Infected Cells using Convolutional Neural Networks</b></p> <p>In many biomedical applications, images are stored and transmitted in the form of compressed images. However, typical pattern classifiers are trained using original images. There has been little prior study on how lossily decompressed images would impact the classification performance. In a case study of automatic classification of malaria infected cells, we used decompressed cell images as the inputs to deep convolutional neural networks. We evaluated how various lossy image compression methods and varying compression ratios would impact the classification accuracies. Specifically, we compared four compression methods: lossy compression via bitplane reduction, JPEG and JPEG 2000, and sparse autoencoders. Decompressed images were fed into LeNet-5 for training and testing. Simulation results showed that for similar compression ratios, the bitplane reduction method had the lowest classification accuracy, while JPEG and JPEG 2000 methods could maintain good accuracies. In particular, JPEG 2000 decompressed images could achieve about 95% accuracy even after 30 to 1 compression. We also provide classification results based on the widely used MNIST dataset, where handwritten digits were found to be much easier to classify using decompressed images, with about 90% accuracy still achievable using only one single bitplane. As a lossy compression method, Autoencoder was also applied to the MNIST dataset, achieving about 85% accuracy with a compression ratio much higher than the other three lossy image compression methods. Autoencoders were also found to provide more scalable compression ratios, while capable of maintaining good classification accuracies.</p>	Python, Deep Learning
13	<p><b>Diabetic Retinopathy Detection by means of Deep Learning:</b></p> <p>Diabetic Retinopathy (DR) is a complication caused by diabetes that affects the human eye. It is caused by the mutilation of the blood vessels of the light-sensitive tissue at the back of the human retina. It's the most recurrent cause of blindness in the working-age group of people and is highly likely when diabetes is poorly controlled. Although, methods to detect Diabetic Retinopathy exist, they involve manual examination of the retinal image by an Ophthalmologist. The Proposed approach of DR detection aims to detect the complication in an automated manner using Deep Learning. The model is trained using a GPU on 35126 retinal images released publicly by eyePACS on the Kaggle website and achieved an accuracy of approximately 81%.</p>	Python, Deep Learning

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14	<p><b>Melanoma Detection Using Convolutional Neural Network:</b></p> <p>Skin cancer is a typical common cancer. Melanoma, also known as malignant melanoma, is the most lethal form of skin cancer and responsible for 75% of skin cancer deaths, despite being the least common skin cancer. The best way to combat that is trying to identify it as early as possible and treat it with minor surgery. In this paper, I systematically study melanoma and notice that using deeper, wider and higher resolution convolutional neural networks can obtain better performance. Based on these observations, I propose an automated melanoma detection model by analysis of skin lesion images using EfficientNet-B6, which can capture more fine-grained features. The experimental evaluations on a large publicly available dataset ISIC 2020 Challenge Dataset, which is generated by the International Skin Imaging Collaboration and images of it are from several primary medical sources, have demonstrated state-of-the-art classification performance compared with prior popular melanoma classifiers on the same dataset.</p>	Python, Deep Learning
15	<p><b>Real-Time Drowsiness and fog Identification based on Eye State Analysis:</b></p> <p>As per the previous year's report concerning to road crashes indicates that the principal cause of such a fatal road accidents is because of negligence behavior as well as drowsiness of driver. This problem reveals the requirement of such a system that can recognize drowsiness state of driver and gives alert signal to the driver before the occurrence of any accidents. Therefore, this proposed work has established drowsy detection as well as accident avoidance system based on the eye blink duration. Here, first the open and close state of eye are detected based on the eye aspect ratio (EAR). Further, the blink duration or count during the changes of eye state from open to close are analyzed. Then, it identifies the state of drowsiness, when blink duration becomes more than a certain limits and sends the alert message to the driver through the alarm. Our developed system has shown the accuracy of 92.5 % approx on yawning dataset (YawDD).</p>	Python, Deep Learning

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16	<p><b>Comparison of Deep Learning Algorithms for Predicting Crime Hotspots</b></p> <p>Crime prediction is of great significance to the formulation of policing strategies and the implementation of crime prevention and control. Machine learning is the current mainstream prediction method. However, few studies have systematically compared different machine learning methods for crime prediction. This paper takes the historical data of public property crime from 2015 to 2018 from a section of a large coastal city in the southeast of China as research data to assess the predictive power between several machine learning algorithms. Results based on the historical crime data alone suggest that the LSTM model outperformed KNN, random forest, support vector machine, naive Bayes, and convolutional neural networks. In addition, the built environment data of points of interests (POIs) and urban road network density are input into LSTM model as covariates. It is found that the model with built environment covariates has better prediction effect compared with the original model that is based on historical crime data alone. Therefore, future crime prediction should take advantage of both historical crime data and covariates associated with criminological theories. Not all machine learning algorithms are equally effective in crime prediction.</p>	Python, Machine Learning, Deep Learning
17	<p><b>Phishing web sites features classification based on extreme learning machine:</b></p> <p>Phishing are one of the most common and most dangerous attacks among cybercrimes. The aim of these attacks is to steal the information used by individuals and organizations to conduct transactions. Phishing websites contain various hints among their contents and web browser-based information. The purpose of this study is to perform Extreme Learning Machine (ELM) based classification for 30 features including Phishing Websites Data in UC Irvine Machine Learning Repository database. For results assessment, ELM was compared with other machine learning methods such as Support Vector Machine (SVM), Naïve Bayes (NB) and detected to have the highest accuracy of 95.34%.</p>	Python, Machine Learning, NLP(Natural Language Processing)

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18	<p><b>Classification of Cancerous Profiles Using Machine Learning</b></p> <p>There are a variety of options available for cancer treatment. The type of treatment recommended for an individual is influenced by various factors such as cancer-type, the severity of a cancer (stage) and most important the genetic heterogeneity. In such a complex environment, the targeted drug treatments are likely to be irresponsive or respond differently. To study anti-cancer drug response we need to understand cancerous profiles. These cancerous profiles carry information which can reveal the underlying factors responsible for cancer growth. Hence, there is need to analyze cancer data for predicting optimal treatment options. Analysis of such profiles can help to predict and discover potential drug targets and drugs. In this paper the main aim is to provide machine learning based classification technique for cancerous profiles.</p>	Python, Machine Learning
19	<p><b>Object Detection, convert object name to text and text to speech:</b></p>	Python, Deep Learning
20	<p><b>Parkinson Disease Detection Using Deep Neural Networks:</b></p> <p>Parkinson's disease (PD) is a neurodegenerative disorder, which is responsible for the deterioration of motor function due to loss of dopamine-producing brain cells i.e. neurons. Tremors, stiffness, slowness in movements, shaking, and impaired balance are some of the primary symptoms of PD. In this paper, two neural network based models namely, VGFR Spectrogram Detector and Voice Impairment Classifier have been introduced, which aim to help doctors and people in diagnosing disease at an early stage. An extensive empirical evaluation of CNNs (Convolutional Neural Networks) has been implemented on large-scale image classification of gait signals converted to spectrogram images and deep dense ANNs (Artificial Neural Networks) on the voice recordings, to predict the disease. The experimental results indicate that the proposed models outperformed the existing state of the arts in terms of accuracy. The classification accuracy on VGFR Spectrogram Detector is recorded as 88.1% while Voice Impairment Classifier has shown 89.15% accuracy.</p>	Python, Machine Learning, Deep Learning

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21	<p><b>Feature Extraction and Classification of Chest X-Ray Images Using CNN to Detect Pneumonia:</b></p> <p>Pneumonia is an infection that causes inflammation of lungs and can be deadly if not detected on time. The commonly used method to detect Pneumonia is using chest X-ray which requires careful examination of chest X-ray images by an expert. The method of detecting pneumonia using chest X-ray images by an expert is time-consuming and less accurate. In this paper, we propose different deep convolution neural network (CNN) architectures to extract features from images of chest X-ray and classify the images to detect if a person has pneumonia. To evaluate the effect of dataset size on the performance of CNN, we train the proposed CNN's using both the original as well as augmented dataset and the results are reported.</p>	Python, Deep Learning
22	<p><b>Bird Species Identification using Neural networks:</b></p> <p>Today, many species of birds are rarely found, and it is difficult to classify bird species when found. For example, for different scenarios, birds come with different sizes, forms, colors and from a human viewpoint with different angles. Indeed, the images show different differences that need to be recorded as audio recognition of bird species. It is also easier for people to identify birds in the pictures. Today, using deep convolutional neural network (DCNN) on GoogLeNet framework bird species classification is possible. For this experiment, a bird image was converted into a gray scale format that generated the autograph. After examining each and every autograph that calculates the score sheet from each node and predicts the respective bird species after the score sheet analysis. In this experiment, the Caltech-UCSD Birds 200 [CUB-200-2011] data collection was used for both training and testing purposes. For training purpose 500 labeled data are used and 200 unlabeled data are used for testing. For classification, Deep Convolutional Neural Networks are used and parallel processing was carried out using GPU technology. Final results show that the DCNN algorithm can be predicted at 88.33% of bird species. The experimental research is performed on the linux operating systems with Tensor flow library and using a NVIDIA Geforce GTX 680 with 2 GB RAM.</p>	Python, Machine Learning, Deep Learning

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23	<p><b>A deep learning approach for Detection of Alzheimer’s Disease Using Analysis of Hippocampus Region from MRI Scan:</b></p> <p>The accurate diagnosis of Alzheimer’s disease (AD) plays an important role in patient treatment, especially at the disease’s early stages, because risk awareness allows the patients to undergo preventive measures even before the occurrence of irreversible brain damage. Although many recent studies have used computers to diagnose AD, most machine detection methods are limited by congenital observations. AD can be diagnosed-but not predicted-at its early stages, as prediction is only applicable before the disease manifests itself. Deep Learning (DL) has become a common technique for the early diagnosis of AD. Here, we briefly review some of the important literature on AD and explore how DL can help researchers diagnose the disease at its early stages</p>	Python, Deep Learning
24	<p><b>Paddy crop disease detection using machine learning</b></p> <p>Now a days, Farmers are facing loss in crop production due to many reasons one of the major problem for the above issue is crop diseases. This is due to lack of knowledge about the disease and pesticides or insecticides available in order to control the disease. But finding the current disease and providing best remedies requires expert opinion or prior knowledge in order to control the disease. This is time consuming and expensive. In order to solve the above issue we are developing a Machine Learning model using Convolutional Neural Network (CNN) algorithm to detect the paddy crop disease using the image and provide the suitable remedy. The remedies provide appropriate information regarding to pesticide or insecticide to be use in order to cure the disease.</p>	Python, Machine Learning

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25	<p><b>Breast cancer detection in digital mammograms:</b></p> <p>This paper discusses an approach for automatic detection of abnormalities in the mammograms. Image processing techniques have been applied to accurately segment the suspicious region-of-interest (ROI) prior to abnormality detection. Unsharp masking has been applied for enhancement of the mammogram. Noise removal has been done by using median filtering. Discrete wavelet transform has been applied on filtered image to get the accurate result prior to segmentation. Suspicious ROI has been segmented using the CNN and Transfer Learning. Tamura features, shape based features and moment invariants are extracted from the segmented ROI to detect the abnormalities in the mammograms. Proposed algorithm has been validated on the Mini-MIAS data set.</p>	Python, Deep Learning
26	<p><b>Weather prediction summery using machine learning Algorithms:</b></p> <p>The activities of many primary sectors depend on the weather for production, e.g. farming. The climate is changing at a drastic rate nowadays, which makes the old weather prediction methods less effective and more hectic. To overcome these difficulties, the improved and reliable weather prediction methods are required. These predictions affect a nation's economy and the lives of people. To develop a weather forecasting system that can be used in remote areas is the main motivation of this work. The data analytics and machine learning algorithms, such as random forest classification, are used to predict weather conditions. In this paper, a low-cost and portable solution for weather prediction is devised.</p>	Python, Machine Learning

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27	<p><b>Evaluation of machine learning models for employee churn prediction:</b></p> <p>Employees are the valuable assets of any organization. But if they quit jobs unexpectedly, it may incur huge cost to any organization. Because new hiring will consume not only money and time but also the freshly hired employees take time to make the respective organization profitable. Hence in this paper we try to build a model which will predict employee churn rate based on HR analytics dataset obtained from Kaggle website. To show the relation between attributes, the correlation matrix and heatmap is generated. In the experimental part, the histogram is generated, which shows the contrast between left employees vs. salary, department, satisfaction level, etc. For prediction purpose, we use five different machine learning algorithms such as linear support vector machine, C 5.0 Decision Tree classifier, Random Forest, k-nearest neighbor and Naïve Bayes classifier. This paper proposes the reasons which optimize the employee attrition in any organization.</p>	Python, Machine Learning
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28	<p><b>COVID-19 Future Forecasting Using Supervised Machine Learning Models:</b></p> <p>Machine learning (ML) based forecasting mechanisms have proved their significance to anticipate in perioperative outcomes to improve the decision making on the future course of actions. The ML models have long been used in many application domains which needed the identification and prioritization of adverse factors for a threat. Several prediction methods are being popularly used to handle forecasting problems. This study demonstrates the capability of ML models to forecast the number of upcoming patients affected by COVID-19 which is presently considered as a potential threat to mankind. In particular, four standard forecasting models, such as linear regression (LR), least absolute shrinkage and selection operator (LASSO), support vector machine (SVM), and exponential smoothing (ES) have been used in this study to forecast the threatening factors of COVID-19. Three types of predictions are made by each of the models, such as the number of newly infected cases, the number of deaths, and the number of recoveries in the next 10 days. The results produced by the study proves it a promising mechanism to use these methods for the current scenario of the COVID-19 pandemic. The results prove that the ES performs best among all the used models followed by LR and LASSO which performs well in forecasting the new confirmed cases, death rate as well as recovery rate, while SVM performs poorly in all the prediction scenarios given the available dataset.</p>	Python, Machine Learning
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29	<p><b>Feature-Level Rating System Using Customer Reviews and Review Votes:</b></p> <p>This work studies how we can obtain feature-level ratings of the mobile products from the customer reviews and review votes to influence decision-making, both for new customers and manufacturers. Such a rating system gives a more comprehensive picture of the product than what a product-level rating system offers. While product-level ratings are too generic, feature-level ratings are particular; we exactly know what is good or bad about the product. There has always been a need to know which features fall short or are doing well according to the customer's perception. It keeps both the manufacturer and the customer well-informed in the decisions to make in improving the product and buying, respectively. Different customers are interested in different features. Thus, feature-level ratings can make buying decisions personalized. We analyze the customer reviews collected on an online shopping site (Amazon) about various mobile products and the review votes. Explicitly, we carry out a feature-focused sentiment analysis for this purpose. Eventually, our analysis yields ratings to 108 features for 4000+ mobiles sold online. It helps in decision-making on how to improve the product (from the manufacturer's perspective) and in making the personalized buying decisions (from the buyer's perspective) a possibility. Our analysis has applications in recommender systems, consumer research, and so on</p>	Python, Machine Learning
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30	<p><b>Skin cancer prediction using Cnn.( Convolutional neural networks)</b></p> <p>There is a necessary need for early detection of skin cancer and can prevent further spread in some cases of skin cancers, such as melanoma and focal cell carcinoma. Anyhow there are several factors that have bad impacts on the detection accuracy. In Recent times, the use of image processing and machine vision in the field of healthcare and medical applications is increasing at a greater phase. In this paper, we are using the Convolution neural networks to detect and classify the class of cancer based on historical data of clinical images using CNN. Some of our objectives through this research are ,to build a CNN model to detect skin cancer with an accuracy of &gt;80% ,to keep the false negativity rate in the prediction to below 10%, to reach the precision of above 80% and do visualization on our Data. Simulation results show that the proposed method has superiority towards the other compared methods.</p>	Python, Deep Learning
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31	<p><b>Multiclass Prediction Model for Student Grade Prediction Using Machine Learning:</b></p> <p>Today, predictive analytics applications became an urgent desire in higher educational institutions. Predictive analytics used advanced analytics that encompasses machine learning implementation to derive high-quality performance and meaningful information for all education levels. Mostly know that student grade is one of the key performance indicators that can help educators monitor their academic performance. During the past decade, researchers have proposed many variants of machine learning techniques in education domains. However, there are severe challenges in handling imbalanced datasets for enhancing the performance of predicting student grades. Therefore, this paper presents a comprehensive analysis of machine learning techniques to predict the final student grades in the first semester courses by improving the performance of predictive accuracy. Two modules will be highlighted in this paper. First, we compare the accuracy performance of six well-known machine learning techniques namely Decision Tree (J48), Support Vector Machine (SVM), Naïve Bayes (NB), K-Nearest Neighbor (kNN), Logistic Regression (LR) and Random Forest (RF) using 1282 real student's course grade dataset. Second, we proposed a multiclass prediction model to reduce the overfitting and misclassification results caused by imbalanced multi-classification based on oversampling Synthetic Minority Oversampling Technique (SMOTE) with two features selection methods. The obtained results show that the proposed model integrates with RF give significant improvement with the highest f-measure of 99.5%. This proposed model indicates the comparable and promising results that can enhance the prediction performance model for imbalanced multi-classification for student grade prediction.</p>	Python, Machine Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

32	<b>Classification of Cancerous Profiles Using Machine Learning:</b> There are a variety of options available for cancer treatment. The type of treatment recommended for an individual is influenced by various factors such as cancer-type, the severity of a cancer (stage) and most important the genetic heterogeneity. In such a complex environment, the targeted drug treatments are likely to be irresponsive or respond differently. To study anti-cancer drug response we need to understand cancerous profiles. These cancerous profiles carry information which can reveal the underlying factors responsible for cancer growth. Hence, there is need to analyze cancer data for predicting optimal treatment options. Analysis of such profiles can help to predict and discover potential drug targets and drugs. In this paper the main aim is to provide machine learning based classification technique for cancerous profiles.	Python, Machine Learning
33	<b>Bitcoin price prediction using machine learning</b>  In this paper, we attempt to predict the Bitcoin price accurately taking into consideration various parameters that affect the Bitcoin value. For the first phase of our investigation, we aim to understand and identify daily trends in the Bitcoin market while gaining insight into optimal features surrounding Bitcoin price. Our data set consists of various features relating to the Bitcoin price and payment network over the course of five years, recorded daily. For the second phase of our investigation, using the available information, we will predict the sign of the daily price change with highest possible accuracy.	Python, Machine Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

34	<p><b>An Approach for Prediction of Loan Approval using Machine Learning Algorithm:</b></p> <p>In our banking system, banks have many products to sell but main source of income of any banks is on its credit line. So they can earn from interest of those loans which they credits. A bank's profit or a loss depends to a large extent on loans i.e. whether the customers are paying back the loan or defaulting. By predicting the loan defaulters, the bank can reduce its Non- Performing Assets. This makes the study of this phenomenon very important. Previous research in this era has shown that there are so many methods to study the problem of controlling loan default. But as the right predictions are very important for the maximization of profits, it is essential to study the nature of the different methods and their comparison. A very important approach in predictive analytics is used to study the problem of predicting loan defaulters: The Logistic regression model. The data is collected from the Kaggle for studying and prediction. Logistic Regression models have been performed and the different measures of performances are computed. The models are compared on the basis of the performance measures such as sensitivity and specificity. The final results have shown that the model produce different results. Model is marginally better because it includes variables (personal attributes of customer like age, purpose, credit history, credit amount, credit duration, etc.) other than checking account information (which shows wealth of a customer) that should be taken into account to calculate the probability of default on loan correctly. Therefore, by using a logistic regression approach, the right customers to be targeted for granting loan can be easily detected by evaluating their likelihood of default on loan. The model concludes that a bank should not only target the rich customers for granting loan but it should assess the other attributes of a customer as well which play a very important part in credit granting decisions and predicting the loan defaulters.</p>	Python, Machine Learning
35	<p><b>Real-Time Smart Attendance System using Face Recognition Techniques.</b></p>	Python, OpenCV, Deep Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

36	<p><b>Prediction of House Pricing using Machine Learning with Python</b></p> <p>This paper provides an overview about how to predict house costs utilizing different regression methods with the assistance of python libraries. The proposed technique considered the more refined aspects used for the calculation of house price and provide the more accurate prediction. It also provides a brief about various graphical and numerical techniques which will be required to predict the price of a house. This paper contains what and how the house pricing model works with the help of machine learning and which dataset is used in our proposed model.</p>	Python, Machine Learning
37	<p><b>Automatic Detection of Genetic Diseases in Pediatric Age Using Pupillometry:</b></p> <p>Inherited retinal diseases cause severe visual deficits in children. They are classified in outer and inner retina diseases, and often cause blindness in childhood. The diagnosis for this type of illness is challenging, given the wide range of clinical and genetic causes (with over 200 causative genes). It is routinely based on a complex pattern of clinical tests, including invasive ones, not always appropriate for infants or young children. A different approach is thus needed, that exploits Chromatic Pupillometry, a technique increasingly used to assess outer and inner retina functions. This paper presents a novel Clinical Decision Support System (CDSS), based on Machine Learning using Chromatic Pupillometry in order to support diagnosis of Inherited retinal diseases in pediatric subjects. An approach that combines hardware and software is proposed: a dedicated medical equipment (pupillometer) is used with a purposely designed custom machine learning decision support system. Two distinct Support Vector Machines (SVMs), one for each eye, classify the features extracted from the pupillometric data. The designed CDSS has been used for diagnosis of Retinitis Pigmentosa in pediatric subjects. The results, obtained by combining the two SVMs in an ensemble model, show satisfactory performance of the system, that achieved 0.846 accuracy, 0.937 sensitivity and 0.786 specificity. This is the first study that applies machine learning to pupillometric data in order to diagnose a genetic disease in pediatric age</p>	Python, Machine Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

38	<p><b>Forest fire prediction system based on Transfer Learning</b></p> <p>Since natural disaster annually leads to casualties and property damages, developments for ICT-based disaster management techniques are fostering to minimize economic and social losses. For this reason, it is essential to develop a customized response technology for a natural disaster. In this paper, we introduce a smart-eye platform which is developed for disaster recognition and response. In addition, we propose a deep-learning based forest fire monitoring technique, which utilizes images acquired from an unmanned aerial vehicle with an optical sensor. Via training for image set of past forest fires, the proposed deep-learning based forest fire monitoring technique is designed to be able to make human-like judgement for a new input image automatically whether forest fire exists or not. Through simulation results, the algorithm architecture and detection accuracy of the proposed scheme is verified. By applying the proposed automatic disaster recognition technique to decision support system for disaster management, we expect to reduce losses caused by disasters and costs required for disaster monitoring and response.</p>	Python, Deep Learning
39	<p><b>Prediction of Liver Diseases Based on Machine Learning Technique:</b></p> <p>Liver diseases have produced a big data such as metabolomics analyses, electronic health records, and report including patient medical information, and disorders. However, these data must be analyzed and integrated if they are to produce models about physiological mechanisms of pathogenesis. We use machine learning based on classifier for big datasets in the fields of liver to Predict and therapeutic discovery. A dataset was developed with twenty three attributes that include the records of 7000 patients in which 5295 patients were male and rests were female. Support Vector Machine (SVM), Boosted C5.0, and Naive Bayes (NB), data mining techniques are used with the proposed model for the prediction of liver diseases. The performance of these classifier techniques are evaluated with accuracy, sensitivity, specificity.</p>	Python, Machine Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

40	<p><b>Prediction of loan status in commercial bank using machine learning classifier:</b></p> <p>Banking Industry always needs a more accurate predictive modeling system for many issues. Predicting credit defaulters is a difficult task for the banking industry. The loan status is one of the quality indicators of the loan. It doesn't show everything immediately, but it is a first step of the loan lending process. The loan status is used for creating a credit scoring model. The credit scoring model is used for accurate analysis of credit data to find defaulters and valid customers. The objective of this paper is to create a credit scoring model for credit data. Various machine learning techniques are used to develop the financial credit scoring model. In this paper, we propose a machine learning classifier based analysis model for credit data. We use the combination of Min-Max normalization and K-Nearest Neighbor (K-NN) classifier. The objective is implemented using the software package R tool. This proposed model provides the important information with the highest accuracy. It is used to predict the loan status in commercial banks using machine learning classifier.</p>	Python, Machine Learning
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41	<p><b>Sign language recognition</b></p> <p>This paper presents a novel system to aid in communicating with those having vocal and hearing disabilities. It discusses an improved method for sign language recognition and conversion of speech to signs. The algorithm devised is capable of extracting signs from video sequences under minimally cluttered and dynamic background using skin color segmentation. It distinguishes between static and dynamic gestures and extracts the appropriate feature vector. These are classified using Support Vector Machines. Speech recognition is built upon standard module - Sphinx. Experimental results show satisfactory segmentation of signs under diverse backgrounds and relatively high accuracy in gesture and speech recognition.</p>	Python, Deep Learning
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42	<h2>FireWarn: Fire Hazards Detection Using Deep Learning Models</h2> <p>Hazardous situations such as house, car, or forest fires may be recorded by cameras long before they are identified by people. To test whether deep learning could be used to quickly detect fires, we performed a series of experiments to detect the presence of fire or smoke in images and labeled them with bounding boxes. Two custom datasets were created in this research: a fire image classification dataset, and a fire and smoke detection and localization dataset. The first one only classifies the whole image, while the detection set further provides information about where the fire or smoke is within the image. We explore the efficacy of a basic convolutional classification neural network, which proved effective for fire classification, but show that pretrained classification models such as ResNet improves the accuracy when classifying fire and non-fire images. The pretrained model achieves 97.14% testing accuracy on our fire classification dataset. For fire detection and localization, three models were trained on images of fire and smoke to find and label the regions of interest. Results show that Faster R-CNN did not perform very well on fire detection and localization, while EfficientDet and YoloV5 performed much better. Moreover, YoloV5 using low resolution images also performed well on smoke detection and localization, which is more difficult than fire. YoloV5 achieved an average precision of 46.6 on our fire and smoke detection dataset.</p>	Python, Deep Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

43	<p><b>Classification of Bird Species using Audio processing and Deep Neural Network</b></p> <p>Convolutional neural networks (CNNs) are powerful toolkits of machine learning which have proven efficient in the field of image processing and sound recognition. In this paper, a CNN system classifying bird sounds is presented and tested through different configurations and hyperparameters. The MobileNet pre-trained CNN model is finetuned using a dataset acquired from the Xeno-canto bird song sharing portal, which provides a large collection of labeled and categorized recordings. Spectrograms generated from the downloaded data represent the input of the neural network. The attached experiments compare various configurations including the number of classes (bird species) and the color scheme of the spectrograms. Results suggest that choosing a color map in line with the images the network has been pre-trained with provides a measurable advantage. The presented system is viable only for a low number of classes.</p>	Python, Deep Learning
44	<p><b>Wine Quality Prediction Using Machine Learning Techniques</b></p> <p>Nowadays people try to lead a luxurious life. They tend to use the things either for show off or for their daily basis. These days the consumption of red wine is very common to all. So it became important to analyze the quality of red wine before its consumption to preserve human health. Hence this research is a step towards the quality prediction of the red wine using its various attributes. Dataset is taken from the sources and the techniques such as Random Forest, Support Vector Machine and Naïve Bayes are applied. Various measures are calculated and the results are compared among training set and testing set and accordingly the best out of the three techniques depending on the training set results is predicted. Better results can be observed if the best features out from other techniques are extracted and merged with one another to improve the accuracy and efficiency.</p>	Python, Machine Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

45	<b>Deep Learning based Surveillance System for Detection of Bike Riders without Helmet and number plate detection</b>	Python, Deep Learning
46	<b>A People Counting System Based on Face-Detection</b>  This paper presents an automatic people counting system based on face detection, where the number of people passing through a gate or door is counted by setting a video camera. The basic idea is to first use the frame difference to detect the rough edges of moving people and then use the chromatic feature to locate the people face. Based on NCC (Normalized Color Coordinates) color space, the initial face candidate is obtained by detecting the skin color region and then the face feature of the candidate is analyzed to determine whether the candidate is real face or not. After face detection, a person will be tracked by following the detected face and then this person will be counted if its face touches the counting line. Experimental results show that the proposed people counting algorithm can provide a high count accuracy of 80% on average for the crowded pedestrians.	Python, Deep Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

47	<b>Human Body Pose Estimation and Applications</b>  Human Pose Estimation is one of the challenging yet broadly researched areas. Pose estimation is required in applications that include human activity detection, fall detection, motion capture in AR/VR, etc. Nevertheless, images and videos are required for every application that captures images using a standard RGB camera, without any external devices. This paper presents a real-time approach for sign language detection and recognition in videos using the Holistic pose estimation method of MediaPipe. This Holistic framework detects the movements of multiple modalities-facial expression, hand gesture and body pose, which is the best for the sign language recognition model. The experiment conducted includes five different signers, signing ten distinct words in a natural background. Two signs, “blank” and “sad,” were best recognized by the model.	Python, Deep Learning
48	<b>Dog Breed Classifier using Convolutional Neural Networks</b>  In the present world, we have wide varieties of species and organisms. This brings into light, the criticality of classification of various Tangible objects. Also, keeping in mind, the ongoing research on genetics and evolution by various scientists across the world, discerning the resemblance among different classes also becomes very crucial. This paper is based on a project which builds a CNN (Convolutional Neural Network) to classify different dog breeds. If the image of a dog is found, this algorithm would find the estimate of the breed. The resembling dog breed is identified if the image of a human is supplied. We have built a pipeline to process real-world images.	Python, Deep Learning

## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

49	<p><b>Flower Species Recognition Based on the Convolutional Neural Network</b></p> <p>At present, in botany, agronomy, and species research, if the identification and classification of flowers is only done manually, it may require a lot of manpower and the recognition accuracy rate is low. Moreover, traditional computer vision and artificial intelligence are widely used. The search query in the database also faces some problems of high recognition cost, low recognition rate and low efficiency. In response to these problems, this article uses five common flower image data sets based on the deep learning field and image information processing problems. Based on the convolutional neural network framework, the flower processing is divided into the following four processes: image information import, preprocessing, Feature extraction and classification of image information. Through the training and verification of five kinds of flower data set graphics, the recognition accuracy rate of this model reaches 75%, and the recognition accuracy rate is improved compared with traditional recognition methods.</p>	Python, Deep Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

50	<p><b>Human Activity Recognition Using Deep Learning</b></p> <p>It is widely accepted that poor hygiene and irresponsible behavior of humans towards their health are major reasons for diseases in developing countries. The maintenance of cleanliness at public places is very much required for everyone. This paper focuses to automate the process to detect un-hygienic activities anywhere, especially at public places, organizations such as offices, schools, colleges, etc., and to detect and recognize the persons. It can further be used to arrange hygiene sanitation workshops for such persons to make them understand the importance of hygiene in life. Such automated systems may also enforce the fine to such persons to demotivate them to involve in misconduct through monetary losses. The proposed system works on Resnet50 architecture to detect and recognize such activities. This pre-trained model is trained transferred in our application and is trained on the dataset that we have prepared for human activities like spitting, throwing garbage, wearing a mask, and not wearing a mask. After the activity recognition, the haar-cascade classifier detects the human face in the activity and Principal Component Analysis (PCA) algorithm with Linear Discriminant Analysis (LDA) recognizes the person from the database available with us of that organization.</p>	Python, Deep Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

51	<p><b>Sentiment Analysis on Amazon Product Reviews</b></p> <p>As everyone is aware of the fact that in this technological era, we all are familiar with the online shopping and the feedbacks associated with them. Since the reviews, ratings and feedback are crucial part of any business to keep track of what are views of the customers on the product. The reviews are the only way to keep up with the customer's needs, advices and corrections that needs to be in the product. For a single type of product which a company sells, includes millions of reviews associated with it and a proper channel is needed to be employed to work with it so as to filter out the information what a customer thinks about the product or how the product is performing in the market. In this paper, authors compared the Ensemble Classifier with other algorithms like logistic regression, SVM, Naïve Bayes, Decision Tree and Multinomial and found out that Ensemble Classifier outperformed the mentioned machine learning algorithms.</p>	Python, Machine Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

52	<p><b>Price Prediction of Used Cars Using Machine Learning</b></p> <p>This paper aims to build a model to predict used cars' reasonable prices based on multiple aspects, including vehicle mileage, year of manufacturing, fuel consumption, transmission, road tax, fuel type, and engine size. This model can benefit sellers, buyers, and car manufacturers in the used cars market. Upon completion, it can output a relatively accurate price prediction based on the information that users input. The model building process involves machine learning and data science. The dataset used was scraped from listings of used cars. Various regression methods, including linear regression, polynomial regression, support vector regression, decision tree regression, and random forest regression, were applied in the research to achieve the highest accuracy. Before the actual start of model-building, this project visualized the data to understand the dataset better. The dataset was divided and modified to fit the regression, thus ensure the performance of the regression. To evaluate the performance of each regression, R-square was calculated. Among all regressions in this project, random forest achieved the highest R-square of 0.90416. Compared to previous research, the resulting model includes more aspects of used cars while also having a higher prediction accuracy.</p>	Python, Machine Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

53	<p><b>Employee Salaries Analysis and Prediction with Machine Learning</b></p> <p>The starting point of this article is to find a suitable method of salary prediction to find a job. Firstly, this paper will introduce the content and usage of different regression models in machine learning. After understanding the methodology that will be used, it is pointed out that the goal of this study is to find the correlation between the salaries of employees and different influencing factors, and to use regression model to predict the salary and screen out the most effective method. In the following experiment, the correlation table between salary and influencing factors was drawn to show which factors had stronger correlation. Secondly, the R2 and RMSE values are used to analyze the results of 5 different regression models (including Multiple Linear Regression, Ridge Linear Regression, Elastic-Net Regression, Lasso Linear Regression and Polynomial Regression) to select a model with the best performance. The results show that graduates can give priority to further improve their academic background before seeking jobs, and it is more suitable to use polynomial regression model to solve this problem.</p>	Python, Machine Learning
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## MACHINE LEARNING AND DEEP LEARNING PROJECTS LIST

54	<p><b>Predicting Medical Provider Specialties to Detect Anomalous Insurance Claims</b></p> <p>The healthcare industry is a complex system with many moving parts. One issue in this field is the misuse of medical insurance systems, such as Medicare. In this paper, we build a machine learning model to detect when physicians exhibit anomalous behavior in their medical insurance claims. This new research has the potential to give some insight in determining if, and when, physicians are acting outside the norm of their respective specialty, which could indicate misuse, fraud, or lack of knowledge around billing procedures. We use a publicly available procedure billing dataset, released by the U. S. Medicare system. Due to the large size of the dataset, we sampled the dataset to include all physicians practicing within one state only. The model uses the multinomial Naïve Bayes algorithm and is evaluated by calculating precision, recall, and Fscore with 5-fold cross-validation. The model is able to successfully predict several classes of physicians with an F-score over 0.9. These results show that it is possible to effectively use machine learning in a novel way to classify physicians into their respective fields solely using the procedures they bill for. This research provides a model that can identify physicians who are potentially misusing insurance systems for further investigation.</p>	Python, Deep Learning
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