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Track 1: HEALTH CARE & LIFE SCIENCES

A Review on Applications of Artificial Intelligence and Robotics in Medical and Healthcare Sector

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Paper Id: AKIP22_0141

The world has changed everyone is suffering from a lack of medicine and medical facilities. The current situation enables us to go with the adjustment with available resources to treat the disease patients. But the technology and its day by day evolving advancements help humankind to fight diseases and cure the suffering diseases with the best outputs. Mainly, focused on the recreating of the resources like medical drugs, medicines, hospital regular facilities, drug development, DNA treatments and analysis, etc. In the current scenario, scientists are trying to overcome the world face problems with the help of next-gen technology. The medical sector has been advancing its age with the help of the latest-gen technologies like artificial intelligence, machine learning, deep learning, robotics, big data, etc. This article defines a review of the applications of different healthcare sectors and the medical sector. It is mentioning about the experiments conducted by different companies, private organizations, etc. This article gives an overview of the technology implantation in the medical and healthcare sectors with examples and with evidence.

Keywords: Artificial Intelligence, Machine Learning, Big Data, Medical, Healthcare, Robotics, Treatment.

Genetic Disorder Prediction using Machine Learning Techniques

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Paper Id: AKIP22_2359

Genetic Disorders are hard to detect, can be very dangerous if not detected. Genetic testing aids patients in making important decisions in the prevention, treatment, or early detection of hereditary disorders. Studies have shown that with increasing population, there has been an exponential increase in the number of genetic disorders. Low awareness of the importance of genetic testing contributes to the increase in the incidence of hereditary disorders. Many children succumb to these disorders and it is extremely important that genetic testing be done in the paediatric age. The existing systems in detecting the genetic disorders are very expensive and some disorders are hard to identify. So in this study, we propose to build a system to find the genetic disorder that a person has. The

proposed system also outputs the type of disorder a person has. This study discusses the application of various Data pre-processing techniques on the genetic disorder Dataset is taken from kaggle. As not all the features are useful for prediction, Auto encoders are used to extract a subset of input features. Then various machine learning models such as OneVsRest Classifier, XGBoost, Artificial Neural Network are trained to classify the genetic disorder. The performance of these models is compared and the best model chosen is ANN with 94.13% accuracy. For better performance of the final model, hyper parameter tuning is used.

Deep Learning Approach for Identifying the Bird Species

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Paper Id: AKIP22_3401

Nowadays, recognizing the bird species is difficult for all of us since there are many species with different sizes, shapes, and colors and we couldn`t remember all the species. Even experts like ornithologists sometimes need to refer to the books in order to recognize them. But every time it's not possible to refer to the books since it takes a lot of time. So, there is a need to develop a method for identifying the bird species. For more convenience to the user, an interface is developed using a streamlit and deep learning model which takes the image as input and identifies the species of a bird based on the features of the trained model within a small amount of time.

Keywords — Bird Species, Deep learning, Recognizing, Streamlit.

Diagnostics And Treatment Help to Patients at Remote Location Using Edge And Fog Computing Techniques (EFCT)

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Paper Id: AKIP22_4251

The basic idea is to see that the patient is monitored all time with the assistance of the fog computing and edge computing, where all the required devices like the sensors will be connected to the patient in order to monitor and based on the data captured by the various sensors[1]. This data which is captured by the various sensors will be the input for the edge computers and then after performing the process of filtration the data is then sent to the fog systems where again the process of filtration happens and ultimately the data is sent to the cloud server [2]. The basic advantage is that the required data will be sent to the cloud server where by the traffic is controlled and reduced. Edge computing helps devices to get faster results by processing the data simultaneously received from thedevices. Fog computing helps in filtering important information from the massive amount of data collected from the device and saves it in the cloud by sending the filtered data [3]. Computation

takes place at the edge of a device's network, which is known as edge computing. That means a computer is connected with the network of the device, which processes the data and sends the data to the cloud in real-time. Here we also make use of the concept of Internet of Things which will be used in order to connect the devices to the patient and to capture the data from those devices [4]. All the sensors used will be connected to the edge system and then after collecting and filtration of data, it will be sent to fog computer. The data collected at edge will be localized and based on the need the data will be escalated to the fog system for further processing and finally will be sent to the cloud server. The overall concept is to see that the traffic on the cloud is reduced. That computer is known as "edge computer" or "edge node". With this technology, data is processed and transmitted to the devices instantly. Yet, edge nodes transmit all the data captured or generated by the device regardless of the importance of the data [5]. Fog computing is an extension of cloud computing. It is a layer in between the edge and the cloud. When edge computers send huge amounts of data to the cloud, fog nodes receive the data and analyze what's important. Then the fog nodes transfer the important data to the cloud to be stored and delete the unimportant data or keep them with themselves for further analysis[6]. In this way, fog computing saves a lot of space in the cloud and transfers important data quickly. Fog computing is a compute layer between the cloud and the edge. Where edge computing might send huge streams of data directly to the cloud, fog computing can receive the data from the edge layer before it reaches the cloud and then decide what is relevant and what isn't. The relevant data gets stored in the cloud, while the irrelevant data can be deleted, or analyzed at the fog layer for remote access or to inform localized learning models [8].

Keywords — Fog computing, Edge Computing, sensors, Remote, Cloud, layers.

Diagnosis of Covid-19 Via Patient Breath Data Using Artificial Intelligence

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Paper Id: AKIP22_4301

Using machine learning algorithms in the rapid diagnosis and detection of the COVID-19 pandemic and isolating the patients from crowded environments are very important to control the epidemic. This study aims to develop a point-of-care testing (POCT) system that can detect COVID-19 by detecting volatile organic compounds (VOCs) in a patient's exhaled breath using the Gradient Boosted Trees Learner Algorithm. 294 breath samples were collected from 142 patients at Istanbul Medipol Mega Hospital between December 2020 and March 2021. 84 cases out of 142 resulted negative, and 58 cases resulted positive. All these breath samples have been converted into * Corresponding author: 2 Istanbul Medipol University, Department of Management Information Systems, ORCID: 0000-0002-5971-9218 E-mail: odoguc@medipol.edu.tr 2 numeric values through five air sensors. 10% of the data have been used for the validation of the model while 75% of the testdata has been used for training an AI model to predict the coronavirus presence. 25% have been used

for testing. SMOTE oversampling method was used to increase the training set size and reduce the imbalance of negative and positive classes in training and test data. Different machine learning algorithms have also been tried to develop the e-nose model. The test results have suggested that the Gradient Boosting algorithm created the best model. Gradient Boosting model provides 95% recall when predicting Covid-19 positive patients and 96% accuracy when predicting Covid-19 negative patients.

Keywords — COVID-19, Epidemic Disease, Artificial Intelligence, E-nose, Breath Data.

Machine Learning Based Crop Recommendation System

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Paper Id: AKIP22_6980

Agriculture is very important in the Indian economy. Nowadays, due to the change in climate and increase in global warming, the weather is an unpredictably variable. So, the most common issue that Indian farmers encounter is that they fail to identify the best-suited and appropriate crop for their soil using the conventional methods. As a result, they experience a significant drop in production. This is a big problem in a country where farming employs over 58 percent of the population and results in low crop production. To overcome this issue, a model is built using machine learning which has a better system to guide the farmers, and it is a modern agricultural strategy in selecting the best crop by considering all the factors like nitrogen, phosphorus, potassium percentages, temperature, humidity, rainfall, ph value. In this paper, proposes use of machine learning techniques such as logistic regression, decision tree, KNN (k- Nearest Neighbours) and Naive Bayes to determine best suited crop based on attributes soil and environmental factors. In the end, an accuracy of 96.36 per cent from the logistic regression, 99.54percent from the decision tree, 98.03percent from the k- nearest neighbours and 99.09percentfrom the naive Bayes is obtained, resulting in the decision tree having the highest accuracy with 99.54percent.This paper gives an extensive Exploratory Data Analysis(EDA) on the Crop recommendation Dataset and build an appropriate Machine Learning Model that will help farmers to predict their suitable crops based on their parameters.

Keywords — Machine learning (ML), crop recommendation, ML algorithms, Streamlit.

Construction Worker Helmet Detection Using Resnet Model

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Paper Id: AKIP22_7322

Proper safety equipment is one of the most critical components in ensuring a safe and functioning workplace. Despite their extreme importance one can observe several workers reporting to work without any proper hardware. This situation presses a growing need to develop proper innovative

methods to monitor properly the safety of people on field and report any oddities to the authorities. As the head is the most vulnerable part in a human anatomy and an injury of any magnitude is enough to be extremely dangerous and even cause death, the use of a hardhat in such cases in the most important. There exist several methods that try to tackle the helmet recognition but most of them are implemented either by trading off speed for accuracy or the opposite. Several methods like YOLOv5, RCNN, k-means are employed for this task but there is still a need for an optimized method that is both extremely accurate and also fast. This project proposes a method that uses Resnetmodel of pytorch library which is an artificial neural network that is trained in several epochs and an Android application to use the model with.

Keywords — Helmet detection, pytorch, resnet model, SSD, Android application.

State-Of-The-Art Review on The Models, Techniques and Datasets To Diagnose Covid-19 Diseases

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Paper Id: AKIP22_8053

The present coronavirus disease 2019 outbreak is a rapidly spreading illness caused by the novel serious acute respiratory syndrome coronavirus2 (SARS-Cov2). The United States of America,India, Brazil, and Russia are among the countries most affected by the disease, with France having the highest infection, morbidity, and mortality rates. Thousands of articles have been published on COVID-19 since early January 2022. The majority of these articles agreed 2 Information Classification: General with descriptions of the mode of transmission, spread, duration, and severity of the illness; models or techniques used to diagnose the COVID-19 disease; and vaccine status in various locations. Thus, this review completely discusses the highest analytical aspects of COVID- 19; various classification, segmentation, prediction, and feature selection techniques to diagnose and detect and predict the Covid-19 disease. The discrimination of COVID-19 images from Pneumonia images, various datasets, and image types are discussed effectively by doing analysis. This review paper will surely help researchers choose the techniques and datasets for effective diagnosis and evaluation.

Keywords — COVID-19, pandemic infection, CNN, Deep Learning, Machine Learning, X-ray.

Lung Cancer Detection by Using Fuzzy Clustering Methods and Machine Learning Techniques

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Paper Id: AKIP22_2030

With lung cancer, the body's normal tissues and organs are overtaken by malignant cells that have grown out of control. The best strategy to lower the death rate is early lung cancer identification. The segmentation of the image using fuzzy C-Means clustering is used in this paper to compute each empirical dispersion of the image to acquire an exact boundary of the sections. A machine learning classifier is used to categorize the normal tissue from the aberrant tissue using the Support Vector Machine (SVM) as its foundation. Using the lung database obtained from the Kaggle portal, the experimental evaluation is carried out.

Keywords — Lung cancer, Fuzzy clustering segmentation, Support Vector Machine, Machine learning.

Artificial Neural Networks Based Distributed Approach for Heart Disease Prediction

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Paper Id: AKIP22_7949

A recent study shows that almost 30% of total global deaths are caused by heart disease. These days precise diagnosis related to heart disease is very difficult. The doctor advises patients to take various tests for diagnosis, which is a very costly and time-consuming process. As medical databases are large and cannot be processed quickly. A new approach has been proposed to predict heart disease from historical data sets. In this chapter heart disease possibilities in patients are predicted with the help of neural networks on distributed computing. Feature selection was applied to the dataset to get the better results and to increase the performance. Feature selection reduces the number of attributes from the dataset and only provides the necessary attributes which directly reduces the number oftests required for the diagnosis.

Keywords — Artificial Neural Networks (ANN), Distributed Computing, Hadoop, Hadoop Distributed File System (HDFS).

Reinforcement Learning based Automated Path Planning in Garden environment using Depth - RAPiG-D

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Paper Id: AKIP22_8079

Path planning by employing Reinforcement Learning is a versatile implementation that can account for the ability of a robot to autonomously map any unknown environment. In this paper, such a hardware implementation is proposed and tested by making use of the SARSA algorithm for path planning and by utilizing stereovision for depth estimation based obstacle detection. The robot is tested in a cell-based environment – 3x3 with 2 obstacles. The goal is to map the environment by detecting and mapping the obstacles and finding the ideal route to the destination. The robot starts at one end of the environment runs through it for a specified number of episodes and it is observed that the robot can accurately identify and map obstacles and find the shortest path to the destination in under 10 episodes. Currently the destination is a fixed point and is taken as the other diagonal end of the environment.

Keywords — Reinforcement learning, SARSA, Path planning, Autonomous robot, Stereo Vision, Depth Estimation.

Performance Analysis of Deep Learning Algorithms in Diagnosis Of Malaria Disease

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Paper Id: AKIP22_8147

Malaria is predominant in many subtropical nations with little health-monitoring infrastructure. To forecast malaria and condense the disease's impact on the population, time series prediction models are necessary. The conventional technique of detecting malaria disease is for certified technicians to examine blood smears visually for parasite-infected RBC (red blood cells) underneath a microscope. This procedure is ineffective, and the diagnosis is dependent on the individual performing the test along with his/her experience. Automatic image identification systems based on machine learning have previously been used to diagnose malaria blood smears. However, so far, the practical performance has been insufficient. In this paper, we have made a performance analysis of deep learning algorithms in diagnosis of malaria disease. We have used Neural Network models like CNNand MobileNet to perform this analysis. The dataset that has been used in this paper was extracted from the National Institutes of Health (NIH) website and consists of 27,558 photos, including 13780 parasitized cell images and 13,778 uninfected cell images. In conclusion, the CNN model performs better detecting the disease.

Analysis Of Human Gait by Selecting Anthropometric Data Based on Machine Learning Regression Approach

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Paper Id: AKIP22_8295

This paper aims to elucidate a method to simulate human gait, which can help design a fully functional exoskeleton to rehabilitate the human lower limb. We present a method to calculate the forces and moments of each lower limb joint using human anthropometric parameters and free body diagrams. Various forces and moment of forces of lower limb joints have been calculated. The anthropometric data is evaluated using the linear regression approach. Also, in this work, we have simulated the normal human walking pattern. The forces and moments acting on lower limb jointsare calculated in horizontal and vertical directions, and the human gait was simulated for a speed of 1.8m/s. The estimated results can be used as input parameters for the development of an exoskeleton for the rehabilitation of the human lower limb.

Breast Cancer Prediction Using Machine Learning algorithm (Random Forest, Decision Tree, Logistic Regression)

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Paper Id: AKIP22_2299

Breast Cancer is a disease which we hear about a lot nowadays. It is one of the most widespread diseases. It effects women all around the world. The National Cancer Institute says that breast cancer is the second most common cancer for women in the United States. There are around 2000+ new cases of breast cancer in men each year and about 2,30,000 new cases in women every year. Diagnosis of this disease is crucial so that woman can get it treated faster. It is best for a correct and early diagnosis. This is an important step in rehabilitation and treatment. Breast cancer detection is done with the help of mammograms, which are basically X-rays of the breasts. It's a tool which is used to detect and help diagnose breast cancer. But, detection is not easy due to different kinds of uncertainties in using these mammograms. Machine Learning (ML) techniques can help in the detection of breast cancer. These techniques can be used to make tools for doctors that can be used asan effective mechanism for early detection and diagnosis of breast cancer which could greatly enhance the survival rate of patients.

Keywords — Breast Cancer, Machine Learning, Random Forest Algorithm

Localization Of Neoplasm Information in Brain Tumor Images Using Neural Networks Classification in Medical Images

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Paper Id: AKIP22_4670

The brain tumor is one of the severe issues with intense illnesses and the reasons oculus sinister (os) individuals die. The tumor is an accomplice to controlling the resonance of tissue in any part of the

body. At some point in these paintings, we generally tend to a square degree taking guy photographs as enter; magnetic resonance imaging i.e. is directed into the hollow inner space of the brain and gives the entire picture of the brain. A brain tumor detection and the machine are delivered at some point in this paper. Here bunch technique supported depth became enforced. The Neural Network (NN) is applied to categorize the numerous ranges of tumor reduce tiers like Benign, Malignant or conventional. A liability Neural Network with spreading is carried out to enforce tumor cells segmentation and type. The name should be created to categorize the entered picture as conventional or ordinary cells. this will be accomplished in 2 ranges: Gray-Level Co-incidence Matrix and consequently the type of mistreatment Neural Network-based carry out. The schematic technique for X-radiation-based total tumor cells detection is the finished mistreatment human scrutiny technique.

Keywords — neural networks (NN), segmentation, malignant, pre-process

Track 2: AI in Finance

Artificial Intelligence in the Financial Services Industry

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Paper Id: AKIP22_1229

Artificial Intelligence (AI) is a critical component of the financial services industry's continuing technological change. Its prominent position on innovation agendas underlines the significant benefits that AI technology could bring to organisations, individuals, and institutions. The main objective was to understand the AI's implementation in the financial services business, as well as its challenges, and future trends. Various financial sectors have profited tremendously from the execution of numerous artificial intelligence technologies. AI in financial services can have real- world consequences for consumers and markets, which could be important from a regulatory and ethical standpoint. Consumer protection, financial crime, competitiveness, business and market stability, lending, credit scoring, investing, robo-advisory, risk management, portfolio optimization, prediction, and cybersecurity are all areas that have an impact. AI applications in banking and financial services are emerging, at the same time, challenges are also advancing.

Keywords — Artificial Intelligence (AI), Financial Services, Applications

Testing For Market Efficiency Using News-Driven Sentiment: Evidence from Select S&P500 Stocks

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Paper Id: AKIP22_3186

Market efficiency theory in the era of data analytics is transforming the capital market landscape. The semi-strong form of efficiency in the market states that the stock market adjusts rapidly and inan unbiased manner to any new information that is available on any public platform. This essentially advocates that any publicly available news does not cause any untoward market fluctuations. The sentiment around such news, which is publicly available does not influence the equity market's stochasticity. The advent of data analytics, particularly Artificial Intelligence (AI) facilitates the delineation of market sentiment structure. It provides the opportunity to decipher the sentiment of any textual data by analyzing the choice of words which construe the content. This study attempts to evaluate the semi-strong form of efficient market hypothesis by leveraging AIdriven techniques. In this study, the sentiment surrounding the top 25 stocks from S&P500 is evaluated based on past news pertaining to the stock, panning over 6 months from 01-Dec-2021 to 31-May-2022. The score of the sentiment analysis is derived and is juxtaposed with the stock returns for the period under consideration. The correlation between the sentiment score and the returns is used to determine the significance of the relationship between sentiment analysis and the returns of each stock. Further, to assess if the news influences the stock returns, the Granger Causality test has been undertaken. There is no evidence of a statistically significant correlation between news-based sentiment and daily returns of stocks. Further, the results of the Granger Causality test, which was conducted on a T+1 basis, indicate that news-based sentiment does not cause daily returns. The study is limited to the aforesaid timeline and the stock-specific news available on the portal from where the data is extracted. There have been many attempts to evaluate semi-strong forms of market efficiency using the event study methodology, however, there has been limited literary evidence that leverages data analytics and operates within the realm of existing theoretical postulates that continue to remain significant within the operational framework of the capital market despite the continued evolution. This work iterates and establishes the efficient market hypothesis; however, it also indicates that the market dynamics are influenced by multiple factors and the assessment of a single factor as a silo does not provide a holistic understanding of the nature of markets.

Keywords: EMH, market efficiency, sentiment analysis, artificial intelligence

Machine Learning and Big Data in Finance Services

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Paper Id: AKIP22_3584

Today, the amalgamation of machine learning and big data is gaining much importance in the academic and industry fields. Machine learning (a branch of Artificial Intelligence) can help to makepredictions and to extract intelligent decisions. In the finance domain, machine learning can help to detect fraud, forecast trading, reach new customers and provide smart decisions. Machine learning relies on historical data collected from different data sources. Nowadays, data can be generated at a very high rate from different data sources (e.g., social media, stock trends, internet of things), big data technology can manage data with respect to the three Vs characteristics: Volume, Variety and Velocity. The Volume refers to the huge amount of data collected while the variety means that data can be of different natures (e.g., structured, non-structured, semistructured). The Velocity means thatdata is generated at a very high speed such as in social media. Given this nature of data, machine learning algorithms need to be expanded in order to deal with different types of data. In this chapter,

we will discuss this interesting combination of big data and machine learning in particular for financial services. We will highlight the main advantages of this integration showing how this can beapplied in the financial services. Furthermore, we will present the current challenges and opportunities in this area.

Credit And Risk Analysis in The Financial and Banking Sectors: An Investigation

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This research was carried out in order to conduct credit and risk analysis in the financial and banking sector. This analysis is carried out by a credit analyst on the borrowers in order to determine their creditworthiness and ability to pay back their debts. The primary goal of conducting this analysis is to determine the credit worthiness of the borrowers. This analysis assists the analyst in determining whether or not to grant credit to the person who has applied for loans based on risk. The study demonstrates how to conduct credit and risk analysis using machine learning techniques. The study employs Random Forest algorithms to analyse the data of a hypothetical financial institution in order to make predictions about the future. The case data has been downloaded from widely available databases and has been used for data analysis. The findings of the study assist decision makers in determining the likelihood of default; the amount of loss resulting from default; and the amount of exposure resulting from default. As a result, the outcome has a greater influence on the decision made by the credit analyst in the banking sector or financial institutions.

Keywords — Risk analysis, Creditworthiness, Credit analyst

Upscaling Profits in Financial Market

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Paper Id: AKIP22_5305

Highly uncertain and volatile nature of stock data makes the forecasting task challenging. It has two well known approaches i.e. Fundamental and Technical analysis. Technical analysis is used by most of the retail investors to gain high returns for short term investment. But relying only on one technical indicator can be misleading. Based on this observation this work utilizes a deep learning model to predict future market values and based on that a trading strategy is proposed which generates buy/sell signals using multiple technical indicators for the Indian Stock Market (NSE). The analysis is done to verify accuracy of proposed trading strategy and result shows that

this approach can upscale the profit.

Keywords — Stock price prediction, Technical analysis, Trading strategy, Deep learning.

Artificial Intelligence in Financial Services: Advantages and Disadvantages

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Paper Id: AKIP22_7125

Artificial Intelligence (AI) and Machine Learning (ML) applications are fully applied in the financial services industry nowadays and reshaping its future. These disruptive applications are used by financial services' providers in general and banks in particular in different areas, such as provision of financial products, credit evaluation and risk management, understanding customer trends, fraud detection, and bankruptcy prediction and by financial services' users, in advisory services, investment decisions and general banking services. AI and ML applications are offering operational and economic benefits and are also the sources of risks to their users. The objective of this chapter is to give a general overview of the AI and ML applications in the financial industry in general and the banking industry in particular and discuss the advantages and disadvantages of these applications from different perspectives. This chapter will be of interest to academics working in the areas of AI and ML in the financial services industry, regulatory bodies, financial services providers, such as bank managers, and financial services users.

Keywords — Artificial Intelligence, Machine Learning, Financial Services, Banking Industry, Advantages, Disadvantages

Cryptocurrencies and Blockchain Technology Application

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Paper Id: AKIP22_8608

Blockchain technology is considered the most recent technological innovation. It is a new approach to database management predicated on many features such as decentralization, trust, the immutability of records, and the consensus mechanism. Bitcoin was the first application of Blockchain technology but it has now many more potential applications in finance, business, government, and other sectors. However, this paper focuses on this technology known also asdistributed ledger technology "DLT" and its application in the financial markets. This study collects data through a review of recent literature on the Blockchain and recognizes how it works, its application in the financial markets, and its benefits and challenges. The study reveals that Blockchain has various applications in the financial markets such as smart contracts, digital currencies, and the issuance of bonds and stocks. The literature shows that the Blockchain provides its users with many benefits such as cost reduction, fostering liquidity, speeding the transactions,

enhancing trust and traceability, and reduced fraud. Also, it allows for the elimination of some requirements such as know your customers (KYC) and the need for intermediaries. However, The DLT is still in its nascent stage of improvement and development and is facing many challenges such as achieving consensus, the requirement of regulations, interoperability and standardization, confidentiality and privacy, scalability, and vast power consumption. On this basis, this paper further investigates these challenges and potential solutions and points out various captivating future research directions.

Keywords — Blockchain, Financial Markets, Fintech, Cryptocurrencies, Bitcoin.

Machine Learning and the Optimal Choice of Asset Pricing Model

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Paper Id: AKIP22_9283

This chapter evaluates the traditional methods for price prediction and examines, what we believe, are the most promising machine learning techniques for that task. Asset price forecasting is one of the fundamental problems in the financial field. Traditional forecasting methods include Capital Asset Pricing Theory (CAPM) or Factor Models to estimate stocks' excess returns. More recently, an increasing number of researchers and financial practitioners began to explore the role of machine learning in asset pricing. We show how these methods have been already applied in practice and discuss their results. We also explore the potential use of neural networks in asset pricing as we believe that their capacity to process large amounts of data together with the ability to accurately capture non-linear relationships among the variables makes them a great tool for price prediction.

Keywords — machine learning, asset-pricing, neural networks, factor models

Applications and Impact of Artificial Intelligence in the Finance Sector

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Paper Id: AKIP22_9545

Artificial Intelligence is current age innovation that makes outlandish things. Similarly, numerous ventures are arising these creative specialists to get a change. In the finance industry where everything changed to digitalized configuration and making works simpler. This paper talks about the various areas and how this artificial intelligence changed that area. What are the imaginative plans and innovation carried out in various areas? This paper talks about an assortment of different monetary applications utilizing AI. This talks about the scope of the application and the employment of those applications. The finance industry changes where there are numerous misrepresentation exercises are going on which is confined by utilizing these advancements.
Keywords — finance, artificial intelligence, machine learning, trading, share market, banking,

insurance, predictions.

Track 3: Emerging Technologies – Business Models, Artificial Intelligence

A Design of Lighting and Cooling System for Museum and Heritage Sites

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Paper Id: AKIP22_1261

The study was undertaken to evaluate the energy conservation aspect for old museums and heritage sites which uses an artificial light source to illuminate and decorate in and around area during night time. This old lighting scheme are metal halide, incandescent lamp, sodium Vapor, CFL, etc. which dissipates heat, and raises the indoor environment temperature and disturbs the natural ecosystem of the heritage site. This causes damage to heritage artwork, the old paintings and murals are discolourised due to thermal deterioration. This paper introduces fiber optic cable-based lighting modules to prevent the effect of thermal temperature rise for museum and heritage sites to enhance the cooling effects and to protect murals The cooling effect analysis was studied with correlation between lumen, temperature to test its application at heritage sites, museums using ANOVA method with regression of 0.826. The prototype was tested at NEERI, Nagpur and the results indicates that it dissipates minimum heat in the ambient environment. Thus the cooling system of museum and heritage sites can be improved.

Keywords — Fiber optic cable, Cooling system, Lighting system

Real Time Fire Detection System Using Yolov5 Based on Deep Learning Method

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Paper Id: AKIP22_2349

Fire detection is difficult due to the varied shapes, colors, and textures of fires. The traditional Image processing technique is more dependent on artificial capabilities, which is always not suitable for all

instances including wooded areas. To overcome this problem, deep learning technology is used to learn and extract fire properties in an adaptable manner. Individual learners' limited learning and perceptive abilities, on the other hand, are insufficient to enable them to perform well in complicated activities. Furthermore, learners tend to place an excessive amount of importance on local information, such as ground truth, while ignoring global information, this will lead to false positives. This study proposes a unique collection of learning strategies for detecting flames in varied contexts.Two separate learners, Yolov5 and EfficientNet, are employed to start the fire detection method. Second, in order to eliminate false positives, EfficientNet, an individual learner, is in charge of acquiring global knowledge. Finally, the detection results are totally dependent on three of the learners' selections. Experiments that use our datasets show that the suggested methods improve the accuracy of detection. After anticipating the findings, our technology sends an alarm message to the necessary authorities. The fire detection method becomes more and more efficient and digitalized asa consequence.

Keywords — FIRE DETECTION, OPENCV, DEEP LEARNING, YOLOv5, ALERT MESSAGE.

Predict Network Intruder Using Machine Learning Model and Classification

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Paper Id: AKIP22_3433

Fire detection is difficult due to the varied shapes, colors, and textures of fires. The traditional Image processing technique is more dependent on artificial capabilities, which is always not suitable for all instances including wooded areas. To overcome this problem, deep learning technology is used to learn and extract fire properties in an adaptable manner. Individual learners' limited learning and perceptive abilities, on the other hand, are insufficient to enable them to perform well in complicatedactivities. Furthermore, learners tend to place an excessive amount of importance on local information, such as ground truth, while ignoring global information, this will lead to false positives. This study proposes a unique collection of learning strategies for detecting flames in varied contexts.Two separate learners, Yolov5 and EfficientNet, are employed to start the fire detection method. Second, in order to eliminate false positives, EfficientNet, an individual learner, is in charge of acquiring global knowledge. Finally, the detection results are totally dependent on three of the learners' selections. Experiments that use our datasets show that the suggested methods improve the accuracy of detection. After anticipating the findings, our technology sends an alarm message to the necessary authorities. The fire detection method becomes more and more efficient and digitalized asa consequence.

Keywords — CICIDS2017, Information Gain, Recent Data set, Accuracy, Execution time, Classification, Model Prediction.

Review Of Learning Analytics Techniques and Its Limitations In The Higher Education: A 21st Century Paradigm

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The Education System is rapidly transforming into a technology-driven learning system, where the data provided by the system on the students' behaviour in a course curriculum could provide a meaningful significance in the teaching-learning pedagogy. Learning Analytics thus could help in the collecting, processing, analysing data. This paper looks into the recent research activities done in developing and designing of Learning Analytics, and presents a review on the various LA tools and techniques involved in data mining and in the student academic assessment. This review emphasizes the use of learning analytics in designing of teaching pedagogy to facilitate the development of 21st century skills, such as collaboration, skilled communication, knowledge development etc among the learners. Various states – of – the – technologies that are used in learning analytics such as data mining, IOT, social media mining, data analytics etc are reviewed thoroughly throughout the paper and a gap in research is highlighted. The article finishes with plans for future research in the area of Learning Analytics in the environment of E-Classroom. This paper proposes a conceptual frameworkto address the gap by combining computer vision and data analytics to use in learning analytics for e-class.

Keywords — Learning Analytics, EDM, Big data, Early intervention, E-learning standards, Feedback, LMS, MOOCs, Pedagogy, Policy, Qualitative evaluations, Theory and Virtual learning environments. regression, clustering, Computer vision, e-Classroom.

Violence Detection for Smart Cities using Computer Vision

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Paper Id: AKIP22_4902

There is a need for developing deep learning solutions to analyze videos to identify the presence of violence. In this paper, the authors propose a deep neural network for the recognition of violent videos. However, despite recent developments in deep learning, very few techniques based on deep learning have been proposed to address the problem of detecting violence from videos. The solution will play a major role in transforming the way law enforcement works and supports the government's initiative to make cities smarter. The model includes CNN and LSTM as a temporal relation learning method which allows us to capture localized spatiotemporal features which further makes it possible for us to analyze local motion taking place in the video. This work also focuses on accuracy and fast response time. The performance was evaluated on the hockey fight dataset as of now in terms of recognition accuracy.

Keywords— CNN, LSTM, Hockey fight dataset

Sentiment Analysis of Customer Reviews for Online Stores That Support Customer Buying Decisions

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Paper Id: AKIP22_5808

This research was carried out in order to conduct a sentiment analysis on customer reviews for an online store. It is a technique that makes use of textual contextual mining to identify and extract information that is subjective. This type of analysis aids a company in understanding the attitudes of their customers toward their brand, products, and services. When it comes to making evidence-based decisions, sentiment analysis is taken to the next level by using count-based metrics. The study examines the key aspects of the product that their customers are concerned about, as well as the reactions or intentions that these customers have toward their brand and product. The analysis is carried out using a machine learning approach, specifically a supervised learning approach. Sentiment analysis is carried out using the Decision Tree technique. The findings assist decision makers in understanding the attitudes of customers toward a brand, a product, or a service. This assists them in determining their future business strategy, which will help them increase their sales and profits.

Keywords — Sentiment Analysis, Customer, Contextual mining

Prediction of Terrorist Attacks over the Globe Using the Global Terrorism Database: A Comparative Analysis of Machine Learning Prediction Algorithms

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Terrorism is a means by which some group of people or organization impacts humankind by the unlawful use of violence and extortion against the government, Ideology, process, and civilians to pursue their political, religious, and economic aim. Terrorism is the most significant critical risk for the governments and the civilians of a particular geographical location. Identifying whether the attack is a terrorist attack or not within a short period itself is a big problem for security forces. Predication of Terrorist groups, weapons type, attack type, Target, and organization behind that terrorist attack helps the security forces minimize the risk and save multiple lives. Many previous studies have used a worldwide terrorism data set to examine the terrorist assaults. Many researchers have also solved the projection of past unsolved terrorist attack problems. This paper mainly focused

on predicting future terrorist attacks using machine learning prediction algorithms and identifying whether the attack is a terrorist attack or not, along with the severity of the attack, weapons type, attack type, and Targets. Prediction of Terrorist attacks reduces the loss of lives in terrorist attacks. Italso helps law enforcement agencies to act accordingly and minimize the risk as much as possible.

Keywords — Terrorist Attack, Global Terrorism Dataset (GTD), Machine Learning algorithms, Attack predication, Data visualization, Data pre-processing, Data Analysis.

Image Denoising Using Autoencoders

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Paper Id: AKIP22_6509

Denoising is a task in image processing and computer vision that aims to predict original pictures by suppressing noise in the noisy image version. Despite the findings, there are still a lot of worries. Denoising fuzzy photos is challenging due to minuscule prints and small image grains that make denoising difficult. The noise in photographs is caused by various internal or external elements and is difficult to deal with. In the fields of image processing and computer vision, image deformation isa big challenge. As a result, it's valuable in a variety of industries where restoring the original pictureis essential for maintaining constant performance. This study develops a complete and robust methodfor encoding a denoiser automatic encoder (DAE), which eliminates image noise and eliminates image clutter.

Keywords — Autoencoder, Machine Learning, Image Analysis, Denoiser, DAE, MNIST, Deep Learning, Artificial Intelligence.

Introduction to Artificial Intelligence

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Paper Id: AKIP22_8112

Since the creation of the first computer, humans have concentrated on developing various approaches to decrease the computer size and increase its operational capacity. During the evolution of computer systems, researchers were interested in creating machines that think, work, and act like humans (Ananth, 2018). This enthusiasm induced the development of Artificial Intelligence theory (AI) and gave rise to the creation of computer-based machines (e.g. robots) that have intelligence almost like humans (Karthikeyan, 2022). According to John McCarthy, the father of AI, artificial intelligence is defined as "the science and engineering of making intelligent machines, especially intelligent computer programs" (McCarthy, 2019). Additionally, the word artificial in AI stands for human-created; the word intelligence represents the power of thinking. Therefore, AI is a human-

made machine with thinking power (Jokanović, 2022), (McCarthy, 2019). Artificial Intelligence is divided into different types. Four major types are (Kambur, 2021).

Keywords — artificial intelligence, finance services, machine learning

Holistic Database Management for Nitizens

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The paper basically deals with the citizen's database over internet which is referred as Nitizens database, to say citizens on internet. This database is going to be very voluminous as it has to accommodate the details of every human being in our country. The database created will help the government and various other organization to easily get information about the nitizen, the initial entry starts when a person is born and the same will end with the person itself. The database is going to provide details of the nitizens to every organization where ever the nitizen visits and based on the unique id which is referred as NID the organization can track the information about the nitizen. For example when the person is born his initial information will be recorded and when the person joins a school his information using NID is tracked and the school updates the information when the nitizen joins the school, similarly colleges, bank, hospitals, companies, government organization where ever the nitizen applies or works or takes services.

Keywords — Nitizen, database, school, college, hospital search, trend, equation, deviation.

Detection of Polarity in the Native-Language Comments of Social Media Networks

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India is known for its many languages and cultures. People speak 22 different languages here. People can use the Google Indic keyboard to convey their feelings about any product, news, incidents, laws, games, and so forth. Individual smart phones, tablets, or computers or laptops are used to access social media in their native tongue. Sentiment analysis (SA) is a difficult task in and of itself, but multilingual SA is even more difficult as different languages have diverse styles of expression, idioms etc. The vector representation of the word2vec model Bengali words is crucial in Bengali sentiment classification. Words from the same context are found to be more comparable in the vectorspace of the word2vec model than other words. This paper presents a novel way to emotioncategorization of Bengali comments using word2vec and the Semantic Web. The accuracy obtained

by combining the findings of the correlation between the subjectivity score of the words and the word2vec word co-occurrence score is 93 percent.

Keywords — Bengali tweets; Native-language comments; vectorization; word2vec; word Embeddings

Machine Learning Techniques for Detecting and Analyzing Online Fake Reviews

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Nowadays, social media plays a crucial role in our daily life. For many things, we rely on social media. People started believing in something that writes on the internet before making any decisions,such as having a look at reviews that are reported on the social media for various purposes like buying a product in online or booking a hotel room for vacation, or visiting a place and others check the reviews to buy products or use various services. Everyone tries to find some uniqueness in multiple activities or products. But there is lots of controversy going around these reviews. It has become difficult to see whether a review is genuine or not. To improve their company standards or high lightening their products, they generate a few fake reviews, which attracts the users, and by that,people start choosing them. , they may generate fake reviews about their competent organization products, which leads to a downturn of that particular organization and spoils its reputation. We needa fake review detection system to avoid these fake reviews and go with genuine reviews. This systemused some machine learning techniques. The proposed method consists of four algorithms GBM, XGBoost, LightGBM, and CatBoost. These algorithms help in detecting fake reviews. All these algorithms are compared to each other and display the accurate results.

Keywords — Machine learning, Data Mining, XGBoost

Artificial General Intelligence, Pragmatism or an Antithesis

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Paper Id: AKIP22_9511

The artificial intelligence is horrified to erase the human organic ideology to mere zombies and capitulation by the authority of an exotic contrivance, and this paper is an investigative review. The resolutions are through the critics of mythology, literature and imaginative of celluloid which are on intellect of both educative and fear mongering. Human metamorphic abilities are compared against the possible machine takeover and scope of envisaged arguments across both the worlds of AI (Artificial Intelligence) and AgI (Artificial General Intelligence) with perpetual integrations through DL (Deep Learning) and ML (Machine Learning) which are early adaptive to AnI (Artificial Narrow

Intelligence) — a cross examination of hypothetical paranoid that is gripping humanity in modern history. The potentiality of a highly sensitive humanoid and sanctification to complete consciousness at par may not be a near probability, but the social engineering through the early stages in life may indoctrinate biological senses to much lower level of ascendancy to AnI — with furtherance in swindling advancement in processes may reach to a pseudo-AI {i}. There are no convincing answers on the discoveries from ancient scriptures about consciousness of archetypal human against an anticipated replication to a fulfilling AI {ii}. Human use of lexicon has been the focal of automata for past few years and the genesis for knowledge, and with divergence of languages and dialects, scores of dictionaries and tools that perform bidirectional of voice and text — contextual services arealready influencing the lives, and appeasement to selective humanly incidentals is widely sustainabletoday {iii}. Synthesizing and harmonizing a pretentious labyrinthine gizmo are the center of human anxiety, but only evaluative research could corroborate that of tantamount to genetic consciousness.

Keywords — BRAIN, DABUS, DARPA, Enzymatic Distress, Singularity, Technophobia, Upanishads.

Application of computer vision to laboratory experiments

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Paper Id: AKIP22_7541

Computer vision has been applied in many fields. We demonstrate some simple applications of computer vision to improve the accuracy of laboratory experiments. The techniques used require only a camera in a mobile phone. Individual frames can be extracted from the video using PYTHON / MATLAB. Further processing of the images can be used to accurately measure time period of oscillation or rotational time periods. The techniques described can be easily extended to a variety of fields.

Keywords — Computer vision, Digital Image Processing, Object Recognition, Time period

Integration of Artificial Intelligence with IoT for Smarter Systems: A Review

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Paper Id: AKIP22_6485

This work reviewed the concepts of AI and its integration with IoT with necessary fundamentals and related concepts to understand the Artificial Intelligence IoT (AIoT). IoT - based smart system requires sensors that provide data, Artificial intelligence obtains the supremacy to solve responses,

presenting both creativity and framework to drive smart work using actuators or interfaces in most design implementation work in real-time applications. The importance of smart sensors and big data from IoT sensors is also discussed. Also, this review discusses some key topics like Cyber-Physical Systems (CPS), the role of AI in IoT, and applications of AI in IoT with a case study on the topic of AI-enabled home monitoring systems using LoRa, which gives the real portrait of AI in smart application development.

Keywords — Artificial Intelligence, IoT, Smart System, Cyber-Physical System, LoRa

Linguistics and Robotics

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Paper Id: AKIP22_9657

The article provides a brief introduction to Linguistics and robotics. It includes information on what language is to us. The article highlights how a machine learning model is used to classify the data regarding linguistics. The article provides a conclusion on how to teach the intrinsic meaning to a robot from the authors' viewpoint.

Keywords — Robot, Artificial Intelligence, Linguistics, Language, Robotics

RezFind: Resume Scanner Using Python

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Paper Id: AKIP22_2879

This article highlights a machine learning model for Resume Screening. Resume Screening is the process of shortlisting the resumes received based on certain criteria. Choosing the right resume for the job is the biggest responsibility of every employer. The machine learning model will make this tedious job into a simple task. This model can save hours of time of the employer. The model uses the resume of a job applicant to match with the Job description provided by the company. The model gives the percentage of match as an output which can help the employer to shortlist the resume.

Keywords — Machine Learning, Resume Screener, Job Description, Talent Acquisition, Screening candidates

The Automated Process to Evaluate personality Based on Video Analytics and Big 5 Traits

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The interview is a lengthy process nowadays. Employees going to the place and giving an interview is hectic in pandemic no proof maintained by any company with the interviewer like how he is answering, what he answered. Artificial intelligence system helps us in many ways to make things easy. In the traditional method of interviewing a candidate for a specific job, an organization's HR department invites a candidate Based on their resume for recruitment. This HR department manually analyzes candidates' skills through their overview to see if they fit the required job. They conduct interviews, and the panel has an essential responsibility in assessing the right candidate who wouldbe appropriate for the job. In an interview, they check the skills and personality of the candidate as all the candidates recruited must have the right attitude and discipline for the Job. Developing a system that can identify a person's facial emotions, voice emotions, and analyze the personality is the primary task of this model. By automating routine, low-value operations, AI gives HR departments the chance to enhance the applicant and workforce while saving up to focus on more substantial, innovative work the HR teams want and need to complete. The new effective induction process can be smartly streamlined such that no step needs to be manually monitored.

Keywords — AI, Analytics, Personality Prediction

Application of Generative Adversarial Networks (GANs) for generating synthetic data and in Cybersecurity

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GANs are one of the most recent innovations in artificial intelligence (AI) that have improved the field. The bulk of data saved and transported in the world of information technology is digital. Companies utilise data to enhance customer experience and give better services to their consumers. Data collecting can be time-consuming and expensive at times. GANs, specifically ConditionalGAN, are a method for synthetic data production and how they may be used to produce synthetic datasets from them. When it comes to cybersecurity, machine learning is an extremely important technology, providing for advanced detection and protection techniques for safeguarding our data. The main topic is the Generative Adversarial Network (GAN), which is a very powerful machine learning paradigm. A GAN's applications in cyber security are not limited to data generation; the GAN may also evade detection systems. This may be used to create malware that avoids detection bymachine learning-based systems. We will talk about the new issues that GANs have created for

intrusion detection systems. Given the positive findings obtained in many GAN applications, it is extremely plausible that GANs may influence security improvements when used to cybersecurity. GAN's game theoretic optimization technique not only gives excellent performance on data generation-based problems, but it also encourages fertilisation for privacy and security-oriented research. Unfortunately, no extensive assessments on GAN in privacy and security exist.

Keywords — GANs, Synthetic data, Cyber-security, Privacy

Introduction to Statistics and Probability

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Probability is currently used in numerous domains, ranging from quantum physics to information theory, and even older fields are using probability now that "noise" is formally acknowledged. Many disciplines' newer parts begin with the admitting of uncertainties. In mathematics, statistics has had an even slower adoption than probability. Despite this, numbers play an important role in our daily lives. Statistical data comes from surveys, polls, and even lab trials in which we have accepted that randomness is the basis of our world view, rather than the deterministic world view.

Keywords — probability, statistics, introduction, random, sample