CHAPTER-1

INTRODUCTION

Many surveillance cameras have been installed in stations, commercial facilities, and city areas to deter crime. However, as the number of cameras increases, the volume of video data has also become massive. This makes it almost it impossible for the police and security companies to visually monitor for suspicious behaviour and crime by checking and analyzing images and videos manually. To address this challenge, artificial intelligence (AI) is being used in the fight against crime.

Police services around the world are actively working to use AI for video analysis and criminal investigation, with a move toward predictive crime detection and prevention based on the concept of proactive, rather than reactive, crime fighting. AI learns around 100 types of movements as basic actions in advance: from simple actions such as walking and stopping, to more complex movements and actions such as turning the head to the right and raising the left hand.

These basic actions can be recognized with an average accuracy of 90 percent or more. The proposed Crime Detection System using OpenCV and AI involves detecting movements and identifying the person's face using computer vision. The proposal also involves fetching the person's name and other information from the backend database and displaying to the user for effective identification with greater accuracy Recognition accuracy of suspicious behaviour can be further refined after the system's introduction. This can be done by specifying additional behavioural conditions, such as turning the head left and right to look around, and by changing analysis parameters, such as each action's duration. The sub application known as Robbery detection system alarms when a unknown person enters the camera vision zone. If it detects a unknown person the system alarms the occupant of the area.

CHAPTER 2

LITERATURE SURVEY

Literature Survey on Criminal Identification in Mumbai using DBSCAN, Akshay Rathod, , Rushikesh Sawant, Ashish Choudhary, Neha Singh, Crime rates are increasing every day in India, with Mumbai being the third among the 19 cities for 3 consecutive years; security against crime needs to be given increased priority by the government as well as individuals. In this paper, literature survey of crime analysis using DBSCAN clustering on crime dataset is done.

A Survey on Crime Occurrence Detection and prediction Techniques, Shruti S.Gosavi, Shraddha S. Kavathekar, Findings of this survey were that when the dataset instances have more number of missing values pre-processing becomes a vital task and crime does not occur uniformly across urban landscapes but concentrates in certain areas. So, predicting crime hotspots is a very important task also applying post-processing will help in lowering the rate of crimes.

Literature survey on video surveillance crime activity recognition, K Kishore Kumar, . This paper presents an overview of present and past reviews for developing future research. The published journals from 2000-2020 were analyzed to know about the video surveillance and crime detection methods in different sectors. A review of the analyzed researchers and their techniques are available in this paper. This survey is useful to improve the crime detection techniques using video surveillance. Moreover, it is a useful tool to gather information.

Analysis for crime prevention using ICT, Yulihño Ochante-Huamaccto, Francis Robles-Delgado, Michael Cabanillas-Carbonell, Crime is a social problem that after the confinement of COVID-19 has increased significantly worldwide, which is why it is important to know what technological tools can be used to prevent criminal acts. In the present work, a systemic analysis was carried out to determine the importance of how to prevent crime using new information technologies. Fifty research articles were selected between 2015 and 2021. The results obtained show specific information on how to prevent crime using new information technologies.

Survey on crime analysis and prediction using data mining techniques, H. Benjamin Fredrick David and A. Suruliandi, Data Mining is the procedure which includes evaluating and examining large pre-existing databases in order to generate new information which may be essential to the organization. The extraction of new information is predicted using the existing datasets. Many approaches for analysis and prediction in data mining had been performed. But, many few efforts has made in the criminology field. Many few have taken efforts for comparing the information all these approaches produce. The police stations and other similar criminal justice agencies hold many large databases of information which can be used to predict or analyze the criminal movements and criminal activity involvement in the society. The criminals can also be predicted

based on the crime data. The main aim of this work is to perform a survey on the supervised learning and unsupervised learning techniques that has been applied towards criminal identification. This paper presents the survey on the Crime analysis and crime prediction using several Data Mining techniques.

Empirical Analysis for Crime Prediction and Forecasting Using Machine Learning, Wajiha safat , Sohail asghar, Saira andleeb gillani, Crime and violation are the threat to justice and meant to be controlled. Accurate crime prediction and future forecasting trends can assist to enhance metropolitan safety computationally. The limited ability of humans to process complex information from big data hinders the early and accurate prediction and forecasting of crime. The accurate estimation of the crime rate, types and hot spots from past patterns creates many computational challenges and opportunities. Despite considerable research efforts, yet there is a need to have a better predictive algorithm, which direct police patrols toward criminal activities. Previous studies are lacking to achieve crime forecasting and prediction accuracy based on learning models. Therefore, this study applied different machine learning algorithms, namely, the logistic regression, support vector machine (SVM), Naïve Bayes, k-nearest neighbors (KNN), decision tree, multilayer perceptron (MLP), random forest, and eXtreme Gradient Boosting (XGBoost), and time series analysis by long-short term memory (LSTM) and autoregressive integrated moving average (ARIMA) model to better fit the crime data. The performance of LSTM for time series analysis was reasonably adequate in order of magnitude of root mean square error (RMSE) and mean absolute error (MAE), on both data sets.

Theoretical and Empirical Analysis of Crime Data, Manisha Mudgal, Deepika Punj and Anuradha Pillai, Crime is one of the biggest and dominating problems in today's world and it is not only harmful to the person involved but also to the community and government. Due to escalation in crime frequency, there is a need for a system that can detect and predict crimes. This paper describes the summary of the different methods and techniques used to identify, analyze and predict upcoming and present crimes. This paper shows, how data mining techniques can be used to detect and predict crime using association mining rule, k-means clustering, decision tree, artificial neural networks and deep learning methods are also explained. Most of the researches are currently working on forecasting the occurrence of future crime. There is a need for approaches that can work on real-time crime prediction at high speed and accuracy. In this paper, a model has been proposed that can work on real-time crime prediction by recognizing human actions.

Crime prediction and intrusion detection with iot and machine learning, Anirudh Kumar Tiwari Prof.(Dr.) Bhavana Narain, The purpose of our work is to design a prototype that helps the police in detecting crime locations. We have taken a condition that if any person is going somewhere and after seeing an accident, when the photo of that accident is taken then automatically it will be sent to nearest police Station. For this, it is necessary to have an application designed by us both in the sender and the receiver. This whole matter will directly

connect the police with crime location which ease the police can reach that location. GPS will be used for location detection. In our work we have collected dataset with the help of digital camera which is attached with IoT device. In first part of our paper we have discussed the grounds of our work under introduction of crime, digital image processing, GPS and IoT. In second part of our work we have discussed the methodology of our work here sensor board, GPS setting has been discussed along with dataset. There is a number of data collection technologies in the IoT. The most widely used technology is the Wireless sensor network (WSN) uses multi-hopping and self-organization to maintain control over the communication nodes.

Crime Detection Technique Using Data Mining and K-Means, Khushabu A. Bokde, Tiksha P. Kakade, Dnyaneshwari S. Tumsare, Crimes will somehow influence organizations and institutions when occurred frequently in a society. Thus, it seems necessary to study reasons, factors and relations between occurrence of different crimes and finding the most appropriate ways to control and avoid more crimes. The main objective of this paper is to classify clustered crimes based on occurrence frequency during different years. Data mining is used extensively in terms of analysis, investigation and discovery of patterns for occurrence of different crimes. We applied a theoretical model based on data mining techniques such as clustering and classification to real crime dataset recorded by police in England and Wales within 1990 to 2011. The Genetic Algorithm (GA) is used for optimizing of Outlier Detection operator parameters using RapidMiner tool.

Criminal face detection system, shiva tamrkar, Criminal Face Detection project aims to build a automated Criminal Face Detection system by levering the human ability to recall minute facial details. Identification of criminals at the scene of a crime can be achieved in many ways like fingerprinting, DNA matching or eye witness accounts. Out of these methods eye witness accounts are preferred because it stands scrutiny in court and it is a cost effective method. It is possible that witnesses to a crime have seen the criminal though in most cases it may not be possible to completely see the face of the perpetrator. The Criminal Face Detection System will be built of an existing criminal database. Input would be provided in the form of sketch or an image and matched against the existing database and results would be provided. Criminal record generally contains personal information about particular person along with photograph.

Inferences from Literature

Above Literatures focuses on Data Mining, K-Means,IOT, DBSCAN. The sole focus of Crime detection system is by leveraging the unique blend of OpenCV and imbibing Artificial Intelligence to implement a Face detection methodology with ADABOOST algorithm & structuring a layered architecture.

CHAPTER 3

SYSTEM ANALYSIS

It is evident from the research of the existing systems that there is a need for advanced and most feasible version for the crime detection system. The solutions which are currently available may provide a wide area of knowledge and satisfy the urgent needs of people. It's to be believed that the current technologies have multiple tech solutions enabled which can be challenging . Python has been proven to implement latest technologies with the help of modules such as OpenCV for crime detection. Python's easy to understand code complexity and inbuilt modules makes it a feasible choice for programmers. Imbibing the likes of HTML,CSS & BOOTSTRAP, provides users a platform for accessing our application using website.

4.1 ADVANTAGES

- Enabling the project with Python improves Productivity and increases Versatility
- ADABOOST algorithm reduces the time complexity of the process.
- Highly accurate
- Provides high security with alarms

CHAPTER 4

SYSTEM REQUIREMENTS

4.1 Software requirements

- Operating system: Windows8,10,11
- Web browser: Google chrome/Firefox/Opera
- Language (UI) – HTML, CSS, JS, Bootstrap
- Text editor: Visual studio

4.2 Hardware requirements

- Processor: Intel core I7 – 7th Gen or higher
- Processor speed: Min 1ghz, recommended 2ghz or more
- Camera – 1.3 MP or higher
- Speaker
- Memory (RAM): Min 8GB, recommended 8GB or above

CHAPTER 5
ARCHITECTURE DIAGRAM

Go to the website → Read the details → Choose a application

Criminal detection system → Opens webcam → Detects criminal with name and a saying " criminal beware" with alarm

Robbery detection system → Opens webcam → Detacts robbery and gives a beep sound

close the application with q