Hyper Securitization using Predictive Policing and Surveillance Penology

Mr. R. Rama Rajesh[1], R. Pavitra Lakshmi[2], S. SadhikaPreethi[3], J. Shifana[4]

Assistant Professor, Department of Information Technology[1],

B.Tech/IT,AnjalaiAmmal-Mahalingam Engineering College, Thiruvarur, TamilNadu, India[2,3,4]

ramrajesh5@gmail.com[1], pavitralakshmi27@gmail.com[2], preethisethu2510@gmail.com[3], jshifanatnj@gmail.com[4]

Abstract— **Pre-crime society, in which information technology strategies and techniques such as predictive policing, actuarial justice and surveillance penology are used to achieve hyper-securitization. Pre-crime intervenes to punish, disrupt, incapacitate or restrict those deemed to embody future crime threats. Data mining can be used as a tool to model criminal behaviour, detect it, and prevent it. Predictive policing refers to the usage of mathematical, predictive analytics, and other analytical techniques in law enforcement to identify potential criminal activity. Penology is a sub-component of criminology that deals with the philosophy and practice of various societies. Using these techniques to criminal data where exploratory data analysis is conducted for visualization and trends prediction. We use the classification algorithm, to classify the dataset based the certain pattern. In the new era of technological advancement, crime prevention has become one of the major concerns of criminology. Criminal behaviour is discussed from legal, biological, psychological, and socio-political points of view. Criminological responsibilities are outlined with relation to the constituent elements of criminal policy: law, penal sanctions, administration of justice, and social prevention of crime. The concept of environmental criminology aspect can help to reduce crime and victimization of victims. These promising outcomes will benefit for police departments and law enforcement organizations to better understand crime issues and provide insights that will enable them to track activities, predict the likelihood of incidents, effectively deploy resources and optimize the decision-making process..**

Index Terms— **Pre-crime, Prediction, Hyper-Securitization, Criminology.**

I. INTRODUCTION

Predictive modelling uses predictive models to analyze the relationship between the specific performance of a unit in a sample and one or more known attributes or features of the unit. The objective of the model is to assess the likelihood that a similar unit in a different sample will exhibit the specific performance. This category encompasses models in many areas, such as marketing, where they seek out subtle data patterns to answer questions about customer performance, or fraud detection models. Predictive models often perform calculations during live transactions, for example, to evaluate the risk or opportunity of a given customer or transaction, in order to guide a decision. With advancements in computing speed, individual agent modeling systems have become capable of simulating human behavior or reactions to given stimuli or scenarios.

Intelligence, security, and public safety agencies gathers large amounts of data from multiple sources - from criminal records of terrorism incidents, and from cyber security threats to multilingual open-source intelligence.

Also, they face the daunting task of defending against cyber security threats and protecting their intellectual assets and infrastructure. Defiantly, the large volume of criminal data from different sources (social media, historical crime data in files and crime records systems) creates many problems in different domain for instance data storage, data warehousing and data analysis. Many law enforcement agencies are facing the problem of being "data rich but information poor". Data generated from different systems was usually unreliable, Data quality is poor and not validated and therefore not trusted fully. Concerns over data accuracy eroded confidence to make important decisions. During decision making, there is usually lack of timeliness of key information. Because of this huge data, there is a problem by law enforcement agencies to predict the likelihood of crime happening given the available information and therefore a need to analyse crime data to find the most effective algorithm for crime prediction.

A well-planned crime prevention strategy not only prevents crime and victimization, but also promotes community safety and contributes to the sustainable development of countries. Effective, responsible crime prevention enhances the quality of life of all citizens. The key benefit of applying business intelligent in crime Prediction is that often there are multiple complex factors which influence crimes to be committed. Business intelligence tools enables us to analyse historical crime data sets, identify the combination of factors which are most closely correlated with crimes and build a model which allows us to predict the likelihood of a crime being committed.

In the existing system we used the Closed-Circuit Television(CCTV) surveillance camera on crimes. It is based on the post-crime systems. The police can find the perpetrator after the incident is happened by using the surveillance camera placed in the spot. The evidences of crime are demonstrated using the CCTV cameras. It has the huge impact on the old categories to turn resistance into criminalization. To explore a new development in policing in preventing the crimes. In this project, the main focus will be on huge expansion of the use of surveillance. We can create a pre-emptive policing to explore unintended consequence arises in the society. The goal of this is not to detect empirical data but to prevent certain unintended crimes also. The main contribution is to create a pre-crime society as recently new police models are more and more geared to predicting what will happen in the future. The project shows the fundamental importance of taking into account, social and legal issues of the society and prevent it.

II. OBJECTIVES

- The Criminal justice is flawed as now in existing post crime society.
- In order to provide hyper securitized society, we are using the pre crime concepts.
- To develop a pre crime society which involves predictive policing and surveillance penology.
- Predictive policy involves using algorithms to analyse massive amount of information in order to predict and help potential future crimes

III. METHODOLOGY

With the help of Random forests or random decision forests:It is an ensemble learning method for classification, regression and other tasks that operate by constructing a multitude of decision trees at training time and outputting the class that is the mode of the classes (classification) or mean/average prediction (regression) of the individual trees. Random decision forests correct for decision trees' habit of over fitting to their training set. Random forests generally outperform decision trees, but their accuracy is lower than gradient boosted trees. However, data characteristics can affect their performance

A. Data Transformation and Data Filtering

Data transformation is the process of converting data from one format to another, typically from the format of a source system into the required format of a destination system. Data transformation is a component of most data integration and data management tasks, such as data wrangling and data warehousing. One step in the ELT/ETL process, data transformation may be described as either "simple" or "complex," depending on the kinds of changes that must occur to the data before it is delivered to its target destination. The data transformation process can be automated, handled manually, or completed using a combination of the two.

Today, the reality of big data means that data transformation is more important for businesses than ever before. An ever-increasing number of programs, applications, and devices continually produce massive volumes of data. Data filtering in IT can refer to a wide range of strategies or solutions for refining data sets. This means the data sets are refined into simply what a user (or set of users) needs, without including other data that can be repetitive,

irrelevant or even sensitive. Different types of data filters can be used to amend reports, query results, or other kinds of information results.

B. Classifying and Decision Making

Classification of Accounts means an act of dividing or grouping or arranging different accounts into certain well defined classes for the purpose of writing entries in the books of account. to enhance the quality of the extracted knowledge and decision-making, the data sets are transformed, the knowledge is extracted with multiple algorithms, the impact of the decisions on the modeled process is simulated, and the parameters optimizing process performance are recommended. Data Mining is the automated process of analyzing large sets of data and then extracting patterns in the data. Data mining tools are capable of predicting behaviors and future trends, allowing an organization to benefit from past experience in making knowledge-driven decisions.
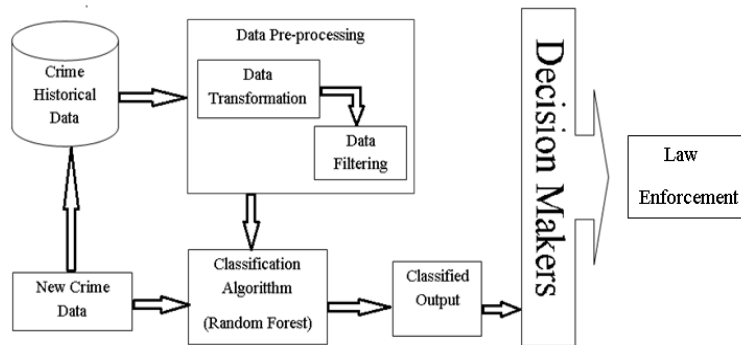
III. SYSTEM ARCHITECTURE

Figure 1. System Architecture

A. Mining Historical Data

Crime history brings method and concept from history to the study of crime and criminal justice. Previous crime reports are stored in this database. Datasets give individual offence data by police force.

B. Data Transformation

Data Transformation is a process of converting data from one format or structure into another format or structure that we require. It gets the crime reports from the database.

C. Data Filtering

The data transformed will be sent here. Here we will choose a small part of our dataset and using that subset for viewing or analysis based on the pattern we required.

D. Classifying and Decision Making

The datasets filtered are classified using the Random Forests (or) Random Decision Forest algorithm. And then the law enforcement users analyse and make the final decision.

E. Creating New Crime Data

The new crime data are given to the crime database which is used for future prediction. It can directly be used to classify the data. The crimes are added by the police force.

F. Algorithm

i. Random forests or random decision forests: Is an ensemble learning method for classification, regression and other tasks that operate by constructing a multitude of decision trees at training time and outputting the class that is the mode of the classes (classification) or mean/average prediction (regression) of the individual trees. Random decision forests correct for decision trees' habit of over fitting to their training set. Random forests generally outperform decision trees, but their accuracy is lower than gradient boosted trees. However, data characteristics can affect their performance.

44

The low correlation between models is the key. Just like how investments with low correlations (like stocks and bonds) come together to form a portfolio that is greater than the sum of its parts, uncorrelated models can produce ensemble predictions that are more accurate than any of the individual predictions. The reason for this wonderful effect is that the trees protect each other from their individual errors (as long as they don't constantly all err in the same direction). While some trees may be wrong, many other trees will be right, so as a group the trees are able to move in the correct direction.

IV. CONCLUSIONS

The authors can conclude on the topic discussed and proposed. Future enhancement can also be briefed here.

APPENDIX A APPENDIX TITLE

Appendixes, if needed, is numbered by A, B, C... Use two spaces before APPENDIX TITLE.

REFERENCES

[1] S. Yadav, M. Timbadia, A. Yadav, R. Vishwakarma andN. Yadav, "Crime pattern detection, analysis &prediction", 2017 International conference of Electronics, Communication and Aerospace Technology(ICECA), 2017.

[2] X. Zhao and J. Tang, "Exploring Transfer Learning for Crime Prediction", 2017 IEEE International Conference on Data Mining Workshops (ICDMW), 2017.

[3] H. Kang and H. Kang, "Prediction of crime occurrence from multi-modal data using deep learning", PLOS ONE, vol. 12, no. 4, p. e0176244, 2017.

[4] S. Nath, "Crime Pattern Detection Using Data Mining", 2006 IEEE/WIC/ACM InternationalConference on Web Intelligence and Intelligent Agent Technology Workshops, 2006.

[5] L. Thota, M. Alalyan, A. Khalid, F. Fathima, S.Changalasetty and M. Shiblee, "Cluster based zoning ofcrime info", 2017 2nd International Conference on Anti- Cyber Crimes (ICACC), 2017.

[6] V. Ingilevich and S. Ivanov, "Crime rate prediction in the urban environment using social factors", ProcediaComputer Science, vol. 136, pp. 472-478, 2018.

[7] G. Weir, E. Dos Santos, B. Cartwright and R. Frank, "Positing the problem: enhancing classification ofextremist web content through textual analysis", 2016IEEE International Conference on Cybercrime andComputer Forensic (ICCCF), 2016.

[8] T. Anand, S. Padmapriya and E. Kirubakaran, "Terror tracking using advanced web mining perspective", 2009International Conference on Intelligent Agent &MultiAgent Systems, 2009.

[9] M. Khan, S. Pradhan and H. Fatima, "Applying Data Mining techniques in Cyber Crimes", 2017 2ndInternational Conference on Anti-Cyber Crimes(ICACC), 2017.

[10] K. Lekha and S. Prakasam, "Data mining techniques in detecting and predicting cyber crimes in bankingsector", 2017 International Conference on Energy.