

Felony Type Prediction Using Machine Learning Algorithms

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Abstract - 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 Logistic Regression is implied in this work in order to classify among various crime patterns and the accuracy achieved was comparatively high when compared to precomposed works.

Key Words: Crime Type, Logistic Regression, Occurrence Prediction, SVM, Accuracy.

1. INTRODUCTION

Crime has become a major thread imposed which is considered to grow relatively high in intensity. An action stated is said to be a crime, when it violates the rule, against the government laws and it is highly offensive. The crime pattern analysis requires a study in the different aspects of criminology and also in indicating patterns. The Government has to spend a lot of time and work to imply technology to govern some of these criminal activities. Hence, use of machine learning techniques and its records is required to predict the crime type and patterns. It imposes the uses of existing crime data and predicts the crime type and its occurrence bases on the location and time. Researchers undergone many studies that helps in analysing the crime patterns along with their relations in a specific location. Some of the hotspots analysed has become easier way of classifying the crime patterns. This leads to assist the officials to resolve them faster. This approach uses a dataset obtained from Kaggle open source based on various factors along with the time and space where it occurs over a certain period of time. We implied a classification algorithm that helps in locating the type of crime and hotspots of the criminal actions that takes place on the certain time and day. In this proposed one to impose a machine learning algorithm to find the

matching criminal patterns along with the assist of its category with the giventemporal and spatial data.

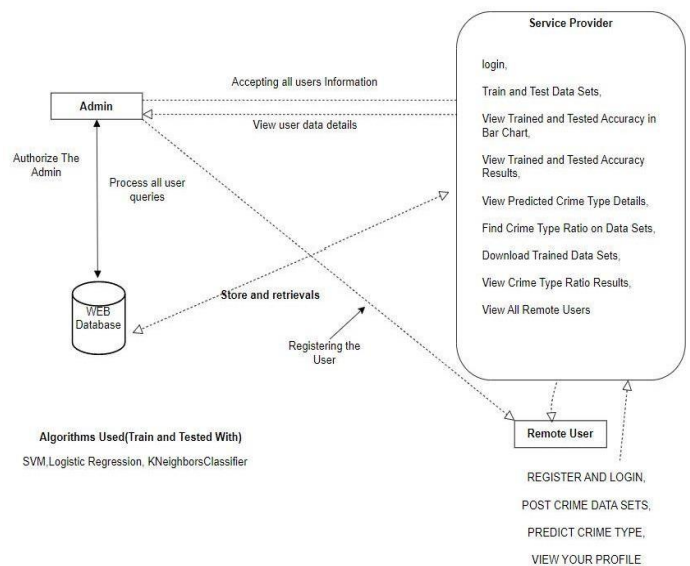


Fig -1: System Architecture

2. IDENTIFY, RESEARCH AND COLLECT IDEA

In [1], Suhong Kim and Param Joshi proposed two different machine learning models which is used for prediction, K nearest neighbour algorithm (KNN) and decision tree approach. The accuracy obtained ranges between 39 to 44 percent when predicting crime patterns and finding the crime type. Benjamin Fredrick David.

In [2], Shraddha S. Kavathekar used association rule mining in predicting crimes. Some Machine learning algorithms including Deep Neural Network (DNN) and Artificial Neural Network (ANN) have been implied. A deep neural network works more accurately using the feature level dataset.

In [3], Chandy and Abraham proposed a random forest classifier in extracting the features for data processing using cloud computing. The extracted features are requesting number, user identification, expiry time, time of arrival and memory requirement. After feature extraction, the prediction of work load is done by using the trained data that has been perceived from the learning stage that

5. CONCLUSION

In conclusion, the difficulty in dealing with the nominal distribution and real valued attributes is overcome by using classifiers such as Logistic Regression, KNN, SVM. Much training time is not required and serves to be the best suited for realtime predictions. It also overcomes the problem of working with continuous target set of variables where the existing work refused to fit with. Thus the crime that occur

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the most could be predicted and spotted using Naïve Bayesian Classification. The performance of the algorithm is also calculated by using some standard metrics. The metrics include average precision, recall, F1 score and accuracy are mainly concerned in the algorithm evaluation. The accuracy value could be increased much better by implementing machine learning algorithms.

ACKNOWLEDGEMENT

We are appreciative to our Division of Computer Science Engineering for their help and giving us a chance to make things simpler. While looking about this point, we found out about different significant and fascinating realities. The tools and the web services provided are of much help.

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