ABSTRACT

CRIME PREDECTION USING MACHINE LEARNING

Crime analysis and prediction is a systematic approach for identifying the crime. This system can predict region which have high probability for crime occurrences and visualize crime prone area. Using the concept of data mining we can extract previously unknown, useful information from an unstructured data. The extraction of new information is predicted using the existing datasets. Crimes are treacherous and common social problem faced worldwide. Crimes affect the quality of life, economic growth and reputation of nation. With the aim of securing the society from crimes, there is a need for advanced systems and new approaches for improving the crime analytics for protecting their communities.

We propose a system which can analysis, detect, and predict various crime probability in given region. This paper explains various types of criminal analysis and crime prediction using several data mining techniques. Machine learning in crime detection leverages data analysis, pattern recognition, and predictive modeling to enhance law enforcement efforts. Key aspects include data collection and preprocessing, feature selection, model training (using various algorithms like Random Forest, Logistic Regression, etc.), and evaluation. These techniques enable crime hotspot identification, prediction of future incidents, and development of targeted crime prevention strategies.

Key points:

- The system utilizes historical crime data, including factors such as location, time, crime type, and frequency. Data preprocessing techniques such as cleaning, normalization, and feature selection are applied to prepare the dataset for analysis.
- Classification algorithms like Support Vector Machine (SVM), K-Nearest Neighbors (KNN), and Naive Bayes are implemented to build predictive models.
- The primary objective is to identify crime-prone areas and predict the likelihood of crime occurrences in a specific region. The output is visualized using graphical tools and heat maps to highlight high-risk zones. This approach not only enhances situational awareness but also aids in proactive decision-making.

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