



## CRIME PREDICTION USING MACHINE LEARNING

### INTRODUCTION

Crime affects social safety and economic growth in many regions. Traditional crime analysis methods mainly depend on manual reports and past records, which makes prediction difficult. With the availability of large amounts of crime data, machine learning can be used to analyze patterns more efficiently. This project aims to study crime data and build a prediction system that can help in understanding crime behavior and forecasting future crime trends.

### METHODOLOGY

The project follows a step-by-step approach. First, historical crime data is collected from reliable sources. The data is cleaned by removing missing and incorrect values. Important features such as time and location are selected for analysis. Machine learning models like KNN, Random Forest, and XGBoost are used to classify crimes. LSTM is applied to predict crime trends over time. Finally, the models are evaluated using accuracy and other performance measures.

### ABSTRACT

Crime prediction is an important task in maintaining public safety and supporting law enforcement activities. This project focuses on predicting crime patterns by analyzing historical crime data using machine learning techniques. Different classification models are used to study crime trends, and a deep learning model is applied to predict future crime occurrences based on time-related data. The system provides useful insights that can help authorities take preventive measures and plan resources more effectively.

### RESULT

The experimental results show that ensemble machine learning models perform better than basic classifiers. Random Forest and XGBoost provide improved accuracy in crime classification. The LSTM model effectively captures time-based crime patterns. The system achieves an overall accuracy of around 77%, indicating reliable performance in predicting crime trends.

### CONCLUSION

This project demonstrates that machine learning techniques can be effectively used for crime prediction. The combination of classification models and time-series forecasting improves prediction accuracy. The proposed system can assist law enforcement agencies in understanding crime patterns and taking preventive actions. With further improvements and real-time data integration, the system can be enhanced for practical use.

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