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# Crime Type and Ouurence Prediction using Machine Learning

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**ABSTRACT:** In this period of ongoing times, wrongdoing has turned into an obvious approach to raising individuals and society under hell. A rising wrongdoing factor prompts an irregularity in the voting demographic of a country. To break down and have a reaction ahead this sort of crimes, it is important to comprehend the wrongdoing designs. This study forces one such wrongdoing design examination by utilizing wrongdoing information acquired from Kaggle open source which thus utilized for the expectation of most as of late happening violations. The significant part of this venture is to assess which kind of wrongdoing contributes the most alongside time span and place where it has worked out. Some AI calculations, for example, Irregular Woods Classifier is suggested in this work to characterize among different wrongdoing designs and the precision accomplished was similarly high when contrasted with precomposed works. Wrongdoing has turned into a key forced string that is believed to be expanding in power. At the point when a movement is portrayed as a crime,It is illegal, as well as government regulations.is very hostile. The examination of criminal patternsnecessitates investigation into a few components ofcriminology, as well as distinguishing designs.

**KEYWORDS:**
└ **Crime Types**:
- Theft
- Burglary
- Robbery
- Sex-offenses

└ **Predictive Factors**:
- Time of day
- Day of week
- Seasonality
- Location (geospatial data)
- Socioeconomic factors
- Demographic characteristics
- Weather conditions

└ **Data Analysis Techniques**:
- Machine learning
- Predictive modeling
- Statistical analysis
- Data mining
- Pattern recognition

└ **Predictive Models**:
- Logistic regression
- Decision trees
- Random forests
- Support Vector Machines (SVM)
- Neural networks
- Time series forecasting

└ **Evaluation Metrics**:
- Accuracy

- Precision
- Recall
- F1-score
- Area Under the Curve (AUC)
- Confusion matrix

## I. INTRODUCTION

The principal intention is to predict the types of crimes that may transpire in a given area within a specified time frame. This involves classifying crimes into different categories such as theft, assault, burglary, etc. Additionally, predicting the occurrence of crimes involves estimating the likelihood of criminal activities happening in specific locations and time periods. Historical records of reported crimes, including information such as crime type, location (latitude and longitude), date, time, and other relevant attributes. Demographic data: Socioeconomic factors, population density, income levels, education levels, etc., which may influence crime rates..

## II. LITERATURE SURVEY

The existing system explores the application of deice wisdom in identifying different crime types and demonstrating its potential to enhance public safety and enforcing laws. A variety of techniques and procedures are discussed, including spatial analysis, data mining, product selection and model analysis. It emphasizes the importance of accurate crime prediction, risk assessment and predicting events in potential law enforcement interventions emphasizing resources to implement and prevent criminal activity.

The proposed system makes use of Random forest classifier, is a contemporary approach to research historical crime facts, patterns and predict future crime occurrences. It starts by collecting large quantities of crime associated records, inclusive of incident reports and demographic records. Next, feature engineering strategies are implemented to extract applicable variables, together with time of day, climate conditions and socio-economic factors which might be then used to train the model. Then the trained model is used to predict the crime incidence in unique areas and time intervals.
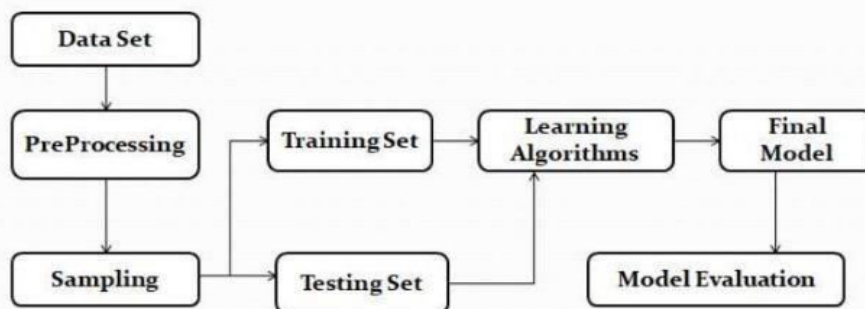
## III. SYSTEM DESIGN



**Figure 1:** System Architecture

## IV. RESULTS AND OUTCOMES

∟ **Data Collection and Analysis**:
Collect data on different types of crimes (e.g., theft, assault, burglary).
Analyze historical crime data to identify patterns and trends.
∟ **Predictive Modeling**:
Use algorithms like logistic regression, decision trees, or neural networks.
Identify relevant features (e.g., weather, demographic data, previous crime rates).
Train models on historical data and validate predictions on test datasets.

∟ **Outcome Prediction**:
Models provide probability estimates for each crime type and occurrence.
Determine the risk level associated with different areas or times.
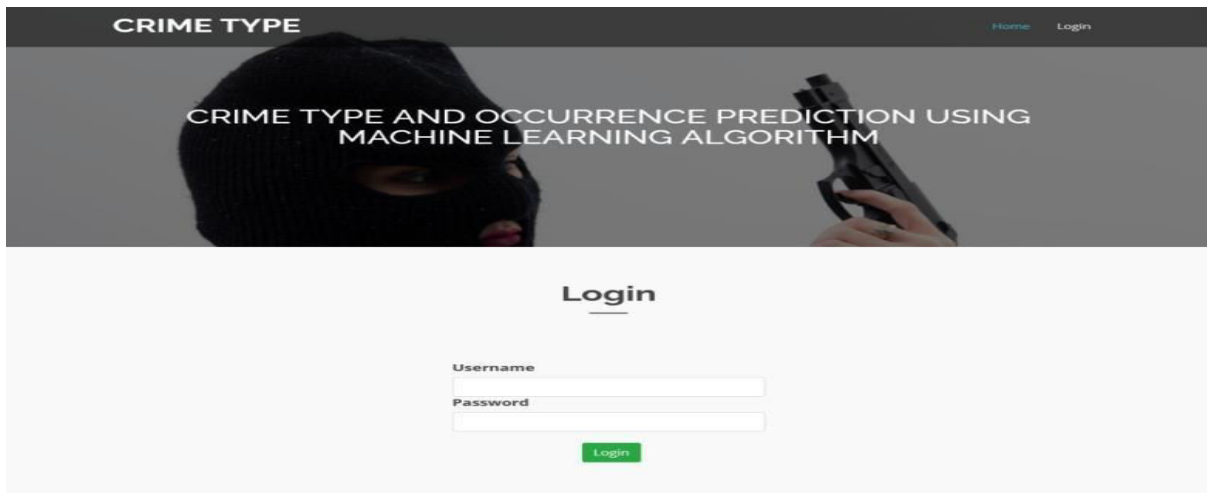Assess potential consequences and severity of predicte

**Snapshots:**



**Figure 2: Login page**



**Figure 3: Admin login**

**V. CONCLUSION**

In this paper, the trouble in managing the ostensible conveyance and genuine esteemed credits is overwhelmed by utilizing two classifiers like Multinominal NB and Gaussian NB. Much preparation time isn't needed and effectively is the most appropriate for realtime expectations. It likewise defeats the issue of working with persistent objective arrangement of factors where the current work wouldn't fit with. Hence the wrongdoing that happen the most could be anticipated and spotted utilizing Irregular Timberland Arrangement. The presentation of the calculation is likewise determined by utilizing a few standard measurements. The measurements incorporate normal accuracy, review, F1 score and precision are basically worried in the calculation assessment. The exactness worth could be expanded much better by carrying out AI calculations.

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