

CSE/ECE 343: Machine Learning Project Proposal

Niteen Kumar(2022336)
niteen22336@iiitd.ac.in

Pratham Mittal(2022373)
pratham22373@iiitd.ac.in

Satyam(2022462)
satyam22462@iiitd.ac.in

Sachin Maurya(2022424)
sachin22424@iiitd.ac.in

CrimeCast: Forecasting Crime Categories

Crime is a deliberate act causing harm or property damage, punishable by authorities based on its severity. With the rise in crime rates, traditional methods are becoming inefficient. By leveraging machine learning techniques, this project aims to predict crime categories, enhance law enforcement strategies, and bolster public safety measures.

1. Motivation

1.1. Why this project?

This project utilizes machine learning to predict crime categories using a dataset that includes details such as date, time, location, and victim demographics. By identifying patterns, the models aim to improve law enforcement strategies, enhance public safety, and enable proactive resource allocation to prevent crime.

1.2. How did we think about this?

As criminal activities become more frequent and complex, traditional methods of crime prevention and resource allocation are becoming less effective. By leveraging machine learning, we can enable law enforcement to strategize and accordingly.

2. Related work

2.1. SKALA Approach

Developed by North Rhine-Westphalia's State Office for Criminal Investigation, SKALA uses data analysis methods like time series analysis and risk terrain modeling to forecast crime and enhance policing strategies.

2.2. NIJ\Real-Time Crime Forecasting Challenge"

This winning model utilizes kernel methods for high-resolution forecasting of sparse spatiotemporal crime events.

2.3. Crime Forecasting with ML and CV

The 2023 study on crime forecasting integrates machine learning and computer vision by using deep learning to analyze surveillance video footage. It aims to predict and prevent criminal activities more accurately by incorporating visual data into crime prediction models.

3. Timeline

Aug 27 - Sep 9: Data collection, preprocessing, and feature identification.

Sep 10 - Sep 23: Exploratory data analysis (EDA) and feature engineering.

Sep 24 - Oct 7: Model selection, training, and initial evaluation.

Oct 8 - Oct 21: Model optimization and final evaluation.

Oct 22 - Nov 4: Prepare project report and presentation.

Nov 5 - Nov 18: Final revisions and feedback integration.

Nov 19 - Nov 28: Finalize documentation and create an web interface

4. Individual Tasks

Sachin: Data collection, preprocessing, feature identification, documentation, training and web-dev

Niteen: EDA, feature engineering and optimization

Pratham: Model selection, training, initial evaluation.

Satyam: Model selection ,optimization, final evaluation

5. Final Outcome

The ultimate goal of this project is to develop a sophisticated and accurate machine learning model that can precisely predict the category of crime based on the features provided in the dataset. The model should be robust, generalizable, and provide actionable insights that could potentially aid law enforcement agencies in crime prevention, resource allocation, and strategic decision-making. The model holds significant real-world applicability in enhancing public safety and community well-being.