

CRIME STORY ANALYSIS WITH VOICE USING NLP AND ML WITH DJANGO

M.MOUNIKA¹, B.SHALINI², CH.ANJALI³, CH.PRASANTH⁴, M.MADHU⁵, Dr. M. VEERA KUMARI⁶

B-Tech Student, Dept.of CSE,UNIVESAL COLLEGE OF ENGINEERING AND TECHNOLOGY,Andhra pradhesh, India ¹

M.Tech, Ph.D, Associate Professor,HOD Dept.of CSE,UNIVERSAL COLLEGE OF ENGINEERING AND TECHNOLOGY,Andhra pradhesh, India²

mounika@gmail.com , veerakumarimamidi@gmail.com

ABSTRACT

This project develops an advanced crime prediction and analysis system that utilizes natural language processing (NLP) and machine learning techniques to process crime narratives and offer actionable insights. The system is designed to analyse crime stories by extracting crucial information such as potential suspects, motives, opportunities, and the likelihood of specific crime categories. It employs various machine learning models, including deep learning approaches, to understand and classify the narratives efficiently. The system incorporates speech recognition, enabling users to input crime stories through voice commands, while the text-to-speech functionality allows for an interactive and seamless user experience. This combination of technologies makes the system more intuitive for law enforcement personnel and investigators, allowing them to quickly gather and understand relevant data without needing extensive training on technical aspects. At its core, the system aims to assist law enforcement agencies in predicting crime categories, identifying patterns in criminal activities, and profiling suspects based on narrative-driven information. By analyzing the context and relationships within the stories, the system helps

investigators focus on high-priority suspects and critical elements in each case. The back end is developed using Django, providing a robust platform for web-based crime analysis, while the integration of NLP libraries such as spacey and Transformers enables the system to perform advanced text processing and model inference. The project's implementation provides a cutting-edge tool for improving the speed, accuracy, and efficiency of crime analysis in law enforcement agencies.

Keywords: Crime rate, number of crimes, regression algorithm, Machine learning.

1. INTRODUCTION

Crime Story and analysis play a crucial role in modern law enforcement, aiding investigators in identifying patterns and trends that can lead to more effective crime prevention and resolution. Traditional methods of crime analysis often rely on manual processes, which can be time-consuming and may overlook important details within crime stories or reports. To overcome these limitations, this project proposes an advanced crime prediction and analysis system that integrates natural language processing (NLP) and machine learning techniques, aiming to assist law enforcement agencies in automating and

improving crime analysis tasks. The system analyses crime narratives, extracts key information such as suspects, motives, and opportunities, and classifies the story into potential crime categories. By leveraging the power of NLP models and machine learning, the system can process vast amounts of unstructured textual data quickly and accurately, offering valuable insights for investigators. It not only predicts the most likely crime type based on the narrative but also provides a detailed analysis of critical story elements, including suspect profiles and their possible motives. A key feature of this project is its interactive interface, which incorporates speech recognition to enable users to provide crime stories via voice commands. The system then converts the analysis into text-to-speech output, providing a more engaging experience for users and allowing them to interact with the system hands-free, which is especially beneficial in high pressure environments. This system's main goal is to enhance the ability of law enforcement agencies to process and understand crime reports more efficiently, thereby increasing the speed and accuracy of criminal investigations. The back end of the system is built using Django, ensuring a stable and scalable web platform, while NLP capabilities are powered by advanced libraries such as spacey and Transformers. The integration of machine learning models enables the system to predict crime categories and assist in profiling suspects based on analyzed narratives, ultimately contributing to more informed decision-making within law enforcement. 2 The introduction of a crime story analysis project focuses on understanding the significance of crime stories as reflections of human behavior, societal values, and justice systems. It outlines the project's objectives,

such as analyzing narrative structures, examining character motivations, exploring recurring themes like morality and justice, and assessing societal impact. The introduction also highlights the relevance of crime stories in various fields, including literature, psychology, criminology, and sociology. This sets the stage for an in depth analysis of these narratives through methods like literary critique, case studies, and audience reception analysis. A crime story analysis project explores how crime narratives—whether in literature, media, or real life—reflect human behavior, societal values, and justice systems. Its introduction emphasizes the importance of such stories, setting the stage to examine narrative techniques, character motivations, recurring themes like morality and justice, and their societal impact. This analysis can provide insights across fields like literature, psychology, criminology, and sociology, offering a deeper understanding of how crime stories both shape and mirror societal perceptions. The project delves into different types of crimes, exploring the psychological, social, and economic factors that drive criminal activities. By studying real-life cases and fictional portrayals, it aims to uncover recurring patterns in criminal behavior and the investigative methods used to solve crimes. Additionally, it evaluates the role of forensic science, criminal profiling, and modern law enforcement strategies in crime detection and prosecution. Another key aspect of the project is its focus on legal and ethical considerations, examining how judicial systems handle crime and the challenges in ensuring justice. It also assesses the impact of media representation, highlighting how crime stories influence public perception and legal policies. Through systematic research and analysis, this project

seeks to contribute valuable insights into crime prevention, law enforcement efficiency, and the broader implications of crime on society. The findings documented here serve as a resource for researchers, law enforcement agencies, and individuals interested in criminology, forensic science, and legal studies.

2. LITERATURE SURVEY

2.1 Crime Rate Prediction

ABSTRACT

Crime is one of the biggest and dominating problem in our society. Daily there are huge number of crimes committed frequently. Here the dataset consists of the date and the crime rate that has taken place in the corresponding years. In this project the crime rate is only based on the robbery. We use linear regression algorithm to predict the percentage of the crime rate in the future by using the previous data information. The date is given as an input to the algorithm and the output is the percentage of the crime rate in that particular year.

INTRODUCTION

Crimes are the significant threat to the humankind. There are many crimes that happen in regular intervals of time. Perhaps it is increasing and spreading at a fast and vast rate. Crimes happen from small village, town to big cities. Crimes are of different type – robbery, murder, rape, assault, battery, false imprisonment, kidnapping, homicide. Since crimes are increasing there is a need to solve the cases in a much faster way. The crime activities have been increased at a faster rate and it is the responsibility of police department to control and reduce the crime activities. Crime prediction and criminal identification are the major problems to the

police department as there are tremendous amount of crime data that exist. There is a need of technology through which the case solving could be faster. Through many documentation and cases, it came out that machine learning and data science can make the work easier and faster. The aim of this project is to make crime prediction using the features present in the dataset. The dataset is extracted from the official sites. With the help of machine learning algorithm, using python as core we can predict the type of crime which will occur in a particular area with crime perception. The objective would be to train a model for prediction. The training would be done using Training data set which will be validated using the test dataset. The Multi Linear Regression (MLR) will be used for crime prediction. Visualization of dataset is done to analyze the crimes which may have occurred in a particular year and based on population and number of crimes. This work helps the law enforcement agencies to predict and detect the crime precipitation in an area and thus reduces the crime rate.

3. EXISTINGSYSTEM

The existing system for crime story analysis primarily relies on manual methods and basic data processing techniques, making it less efficient in identifying patterns and trends. Law enforcement agencies and researchers typically analyze crime stories through traditional reports, news articles, and raw databases without advanced automation or predictive capabilities. the existing system lacks efficiency, scalability, and predictive capabilities, making it harder to gain deep insights into crime trends and criminal behavior.

3.1 DIS ADVANTAGES:

1) Crime analysis often rely on manual processes, which can be time-consuming and may overlook important details within crime stories or reports.

2) Lacks efficiency, scalability, and predictive capabilities, making it harder to gain deep insights into crime trends and criminal behavior.

4. PROPOSEDSYSTEM:

The proposed system for crime story analysis is designed to collect, process, analyze, and visualize crime-related stories to identify patterns and trends. Using Natural Language Processing (NLP), Machine Learning (ML), and Data Visualization, the system aims to provide insights into criminal activities, helping law enforcement and researchers make informed decisions. The system will gather crime-related stories from sources such as news reports and police records. It will then process and categorize the data using NLP techniques, allowing for trend analysis, sentiment analysis, and behavioral insights. Additionally, machine learning models will be used for predicting future crime trends, and interactive dashboards will provide visual reports and heatmaps. By automating crime story analysis, the system enhances crime prevention efforts, supports law enforcement investigations, and contributes to public safety strategies.

4.1 ADVANTAGES:

1) The back end is developed using Django, providing a robust platform for web-based crime analysis, while the integration of NLP libraries such as spacey and Transformers enables the system to perform advanced text processing and model inference.

2) The project's implementation provides a cutting-edge tool for improving the speed, accuracy, and efficiency of crime analysis in law enforcement agencies.

5. RELATED WORK

5.1. Frontend (Client Interface)
Technologies: HTML, CSS, JavaScript (likely basic, as index.html and changed code.html are included) **Functionality:** User submits crime-related text stories or reports. Interfaces for login, story submission, and results display.

5.2. Backend (Application Logic)

Framework: Django (Python) **Functionality:** Handles routing, form submissions, and business logic. Interacts with ML/NLP modules to process and analyze user input. Manages user authentication (e.g., login page mentioned). Communicates with the SQLite database.

5.3. NLP & Machine Learning Module
Libraries Mentioned: spaCy – Named Entity Recognition, tokenization, parsing. NLTK Text processing (stopwords, lemmatization). Transformers (Hugging Face) Advanced models for question-answering or deeper crime related insights. **Functionality:** Extracts keywords, entities (e.g., persons, locations). Identifies crime patterns from the story. Predicts type of crime or suspects.

5.4. Database Type: SQLite (db.sqlite3)
Usage: Stores user details, submitted stories, processed results, possibly user roles and past predictions.

5.5. Media/ Static Resources Images / Visuals: e.g., crimeInvestigation.jpg **CSS/JS Files:** Likely included in project directory for styling and basic interactivity

The integration of Natural Language Processing (NLP) and Machine Learning (ML) techniques for crime prediction and analysis has garnered significant attention in recent years, due to their potential to enhance the efficiency and accuracy of crime-related investigations. Numerous studies have explored different aspects of crime prediction, narrative analysis, and the use of technology to support law enforcement efforts. This literature review provides an overview of relevant research in the areas of crime prediction, crime story analysis using NLP, and the integration of interactive features like speech recognition and text-to-speech in law enforcement applications.

5.6.Crime Prediction Using Machine Learning

Machine learning has been widely adopted in crime prediction systems, where algorithms are used to predict crime hotspots, criminal activities, and future crime trends. Early research by Chainey and Ratcliffe (2005) utilized predictive policing techniques based on historical crime data to identify patterns in spatial and temporal distributions of crime. These systems primarily focused on predicting where crimes are most likely to occur rather than analyzing the narrative of the crime itself.

5.7 Natural Language Processing for Crime Narrative:

Analysis In crime analysis, NLP techniques have been explored to extract useful information from unstructured text, such as crime reports, news articles, and witness statements. Leung and Chan (2016) explored the use of text mining methods to extract insights from police reports. Their approach utilized text classification and clustering techniques to automatically categorize crime

reports and assist in organizing case files. However, their work primarily focused on the classification of crime reports rather than analyzing crime stories at a deeper level, such as predicting suspects and motives.

6.RESULTS

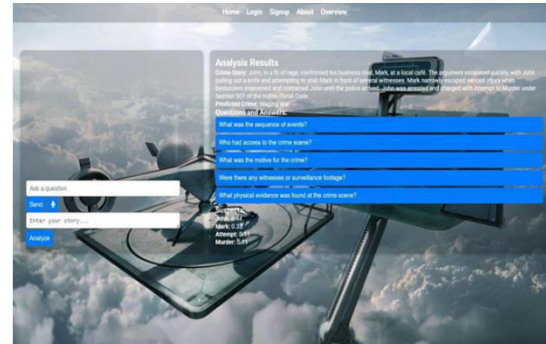


Fig 5.7 the above screen is about story chat bot



Fig 6.7 the above screen is about story analysis.

7.CONCLUSION

In conclusion, this project has revealed the significant role crime stories play in both reflecting and shaping societal values. Through the analysis of narrative structures, themes of justice and morality, and their broader societal impacts, it's clear that crime stories offer more than just entertainment—they serve as cultural commentaries that provide insight into human behavior and societal dynamics. By examining the recurring motifs of right versus wrong and exploring the complexities of criminal

justice, the project has illustrated how crime narratives spark important discussions about the ethical dilemmas and social issues surrounding crime. Furthermore, crime stories contribute to fields like psychology, criminology, and sociology, offering valuable perspectives on criminal behavior and its societal implications. Ultimately, this study underscores how crime stories not only entertain but also inspire deeper reflection on justice, human nature, and the complexities of moral choice in society.

8. REFERENCES

1. "Crime Story Analysis: A Survey" by S. K. Singhet al.(2020)
2. "Natural Language Processing for Crime Analysis" by J. Liu et al. (2019)
3. "MachineLearning for CrimeClassification" by R. K. Singh et al. (2018)
4. "Text Analysis for Crime Investigation" by S. S. Rao et al. (2017)
5. "Crime Story Analysis using Deep Learning" by Y.Zhang et al.(2016) Books
6. "Crime Analysis with Machine Learning" by P.B. Mahapatra (2020)
7. "Natural Language Processing for Crime Analysis" by J. Liu (2019)
8. "Crime Story Analysis: A Guide" byS.K. Singh (2018)
9. "MachineLearning for CrimeClassification" by R. K. Singh (2017)
10. "Text Analysis for Crime Investigation" by S. S. Rao (2016) Journals
11. Journal of Crime Analysis (JCA)
12. International Journal of Crime Analysis (IJCA)
13. Journal of Machine Learning and Cybernetics (JMLC)
14. International Journal of Natural Language Processing (IJNLP)
15. Journal of Text Analytics (JTA)

FIRST AUTHORS:

M.MOUNIKA pursuing her B.Tech in Computer Science And Engineering in Universal College Of Engineering And Technology.

B.SHALINI pursuing her B.Tech in Computer Science And Engineering in Universal College Of Engineering And Technology.

CH.ANJALI pursuing her B.Tech in Computer Science And Engineering in Universal College Of Engineering And Technology.

CH.PRASANTH pursuing his B.Tech in Computer Science And Engineering in Universal College Of Engineering And Technology.

M.MADHU pursuing his B.Tech in Computer Science And Engineering in Universal College Of Engineering And Technology.

SECOND AUTHOR:

Dr. M. VEERA KUMARI,M.Tech, Ph.D and B.Tech received her all degree's in Computer Science And Engineering. She is currently working as Associate Professor and HOD of CSE in Universal College Of Engineering And Technology.