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FIR Analysis using ML for Proper Acts and Sections

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Abstract: ***This project aims to enhance the filing process of First Information Reports (FIRs) by improving speed, accuracy, and legal correctness. A critical aspect of FIR filing involves correctly applying the relevant sections of the Indian Penal Code (IPC) and other applicable laws, as errors can significantly impact prosecution and justice outcomes.***
To achieve this, the project emphasizes key objectives such as ensuring accuracy and completeness through an AI/ML system that captures all necessary information while minimizing errors. Legal compliance is prioritized by adhering to established requirements and standard FIR formats set by the IPC.
Keywords: FIR, IPC, RIT, Legal Section, Machine Learning, User Manual, Law enforcement.

I. INTRODUCTION

This project aims to improve the process of filing First Information Reports (FIRs) by making it faster, more accurate, and legally correct. A key part of filing FIRs is applying the right sections of the Indian Penal Code (IPC) and other relevant laws, ensuring that cases are handled properly. Mistakes, such as assigning the wrong or weaker legal sections, can lead to serious issues in the legal process, affecting prosecution and overall justice. The project focuses on a few important areas in order to meet these objectives. It places an extreme value on accuracy and completeness to make sure the ML system accurately records all relevant data and reduces inaccuracies in defect reports. regulatory compliance is a top focus since the system will abide by the standard FIR formats provided by the IPC as well as important regulatory requirements. Furthermore, upholding data transparency is essential, as is giving users clear instructions on filing FIRs through the provision of a usermanual. The Legal Requirements of the Indian Penal Code (IPC), which outlines criminal offenses and associated punishments, will be the project's final step. The system would reduce human mistake by automatically classifying FIRs and suggesting relevant legal sections depending on the content of the FIR. This will increase the overall effectiveness of the legal process by enabling law enforcement officials to give less time to paperwork and more time to essential responsibilities like conducting investigations and obtaining evidence.

II. PROBLEM STATEMENT

First Information Reports (FIRs), which are kept on file by the police when complaints are filed, contain specific provisions from the Indian Penal Code (IPC) as well as other pertinent laws. The complex nature of these legal systems and the number of acts that can be relevant to a particular case provide a problem, though.

Because of this complexity, it may be challenging for officers to decide which legal provisions are appropriate in each given circumstance. As a result, there is a risk of applying either the wrong section or a weaker section that doesn't fully address the nature of the complaint. This can affect the progress of a case and potentially lead to accusations of mishandling legal charges Machine Learning (ML) can play a crucial role in resolving these issues by analyzing the language of the complaint and suggesting the most relevant sections of the IPC and other legal acts.

III. LITERATURE REVIEW

1) Indian Penal Code Recognition Using Multiclass Classification Techniques, 2023. The Authors Verma, S., & Choudhary, R. state that multiclass classification models, such as Naive Bayes, Decision Trees, and BERT-based transformers, can effectively recognize and categorize sections of the Indian Penal Code from FIR narratives. Their research demonstrates that deep learning models, particularly those using transformers, outperform traditional methods in speed and accuracy. This work is significant for automating legal documentation and ensuring the correct categorization of FIRs.

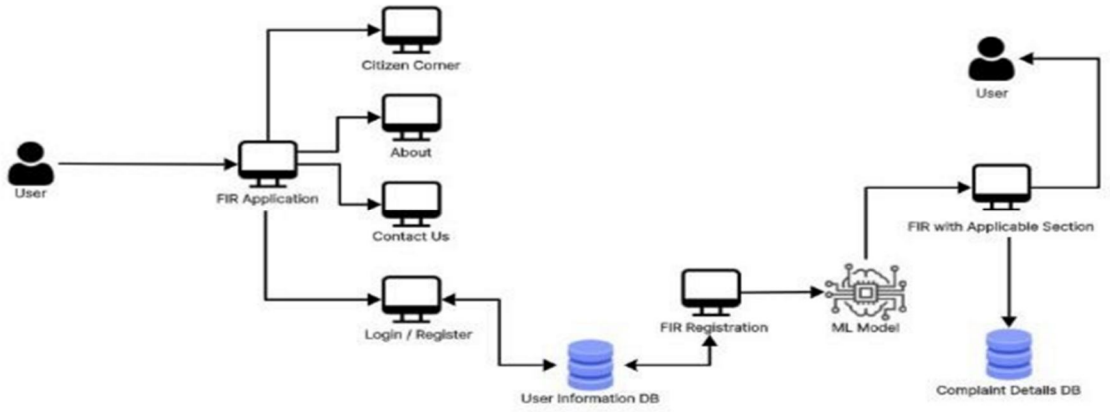
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2) Application of Machine Learning in Crime Prediction, 2022. The authors Sharma and Singh says that different machine learning techniques can be utilized to predict crime trends and automate the categorization of FIRs. They evaluated models such as Random Forest, Support Vector Machines (SVM), and neural networks for analyzing FIR data and suggesting suitable IPC sections.
3) AI-Based Police Penal Code Identification Based on Keywords in FIR, 2021. The authors Patil and Shinde says that a machine learning model using keyword analysis can effectively recommend appropriate sections of the Indian Penal Code (IPC) from FIR descriptions. They emphasized the role of natural language processing (NLP) in identifying relevant legal clauses, aiming to automate FIR categorization and reduce manual errors in section identification
4) Crime Classification Using Machine Learning and Data Analytics, 2021. The authors Gupta and Bose said that combining data analytics with machine learning can improve the classification of crime types from FIR data. They focused on using clustering algorithms like K-means and hierarchical clustering to group similar FIRs, which can then be matched to appropriate IPC sections.

IV. OBJECTIVES

1) To ensure the accuracy & completeness of FIR's by minimizing errors and omissions through the ML system.
2) To transform extracted information into a structured format for consistent and clear FIR generation.
3) To design the system to adhere to important legal requirements and standard FIR formats specified by law enforcement agencies.
4) To maintain data transparency and clear communication about evaluation process.

V. METHODOLOGY



A. *User Authentication Module*

- Login/Logout: Secure login and logout functionality for users.
- User Registration: Allow new users to create accounts.
- Password Recovery: Able users to recover or reset forgotten passwords.

B. *FIR Analysis Module*

- Input: Users can input incident descriptions for analysis.
- Analysis: Process the input to suggest applicable sections of the Indian Penal Code (IPC).
- Ouput: Display Applicable IPC sections based on the analysis.

C. *IPC Section Information Module*

- Users can search for specific IPC sections and retrieve detailed information.
- Provide clear descriptions and applicability of IPC sections.

D. City Police Map Module

- Display an interactive map showing police stations.
- Allow users to find the nearest police station based on their location.

E. Related FIR Cases Searching Module

- Users able to search for FIRs using keywords, sections, or types of crime.
- Provide detailed views of selected FIRs.

F. Citizen Corner Module

- Provide information about the RTI Act.

VI. LIMITATAION OF APPLICATION

1) Limited Dataset - Insufficient historical FIR data may lead to inaccurate ML predictions and section recommendations.
2) Language Barrier - Users may submit FIR descriptions in various languages or dialects, affecting the accuracy of analysis.
3) Changes in IPC Sections - Frequent amendments or additions to IPC sections could render the system outdated

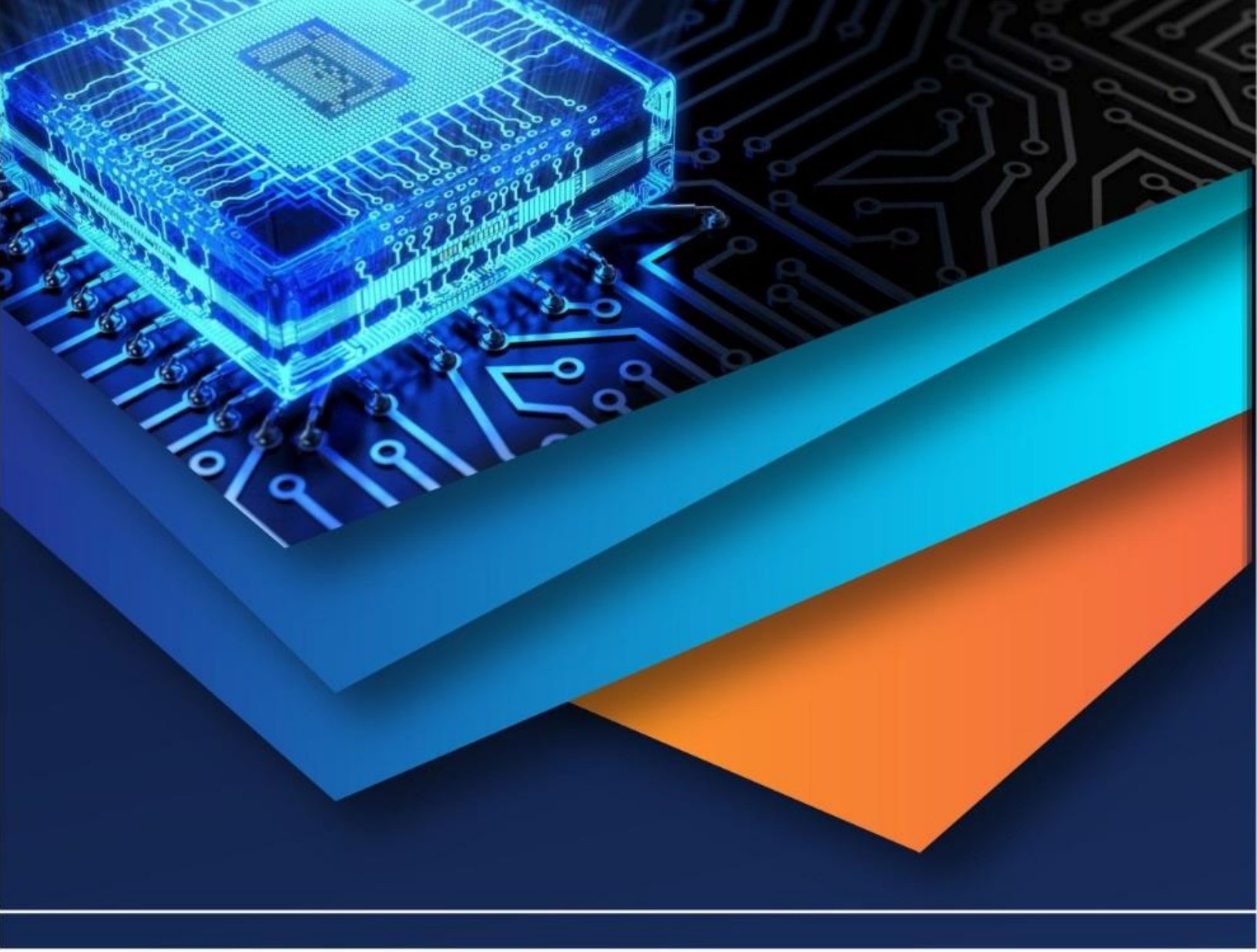
VII. CONCLUSION

The development of an ML-powered system for analyzing FIR aims to enhance the efficiency and accuracy of legal processes. This project focuses on improving user experience for citizens while streamlining police operations. A structured implementation timeline, ensures organized progress and adaptability to challenges, while identified risks including limited datasets, language barriers, and changes in IPC sections highlight a proactive approach to maintaining system relevance and effectiveness. Engaging users and stakeholders throughout the development process fosters trust and encourages adoption, aiming to improve the accuracy of legal recommendations. The project aspires to empower both citizens and law enforcement, transforming FIR handling into a more effective and transparent legal process

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