

Chatbot That Can Differentiate Between Domestic Violence and Land Grabbing

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Abstract— This project creates a chatbot prototype designed to assist users in identifying and addressing two serious societal issues: domestic violence and land grabbing. The chatbot engages users in a conversational manner, first asking clarifying questions to determine whether their concern relates to personal safety or property disputes. Based on the user's responses, the chatbot classifies the issue and provides targeted information, resources, and next steps. For cases of domestic violence, the chatbot offers support by sharing information about helplines, shelters, and legal aid services that can help individuals escape abusive situations. It may also provide safety tips and legal guidance, ensuring that users are informed about their rights and available support options. In the case of land grabbing, the chatbot explains the concept of illegal land acquisition and provides resources related to property rights and dispute resolution. It can also direct users to relevant legal aid organizations and advocacy groups that specialize in property-related issues. The chatbot not only informs but also offers users the option to report incidents to the appropriate authorities or organizations, guiding them through the necessary steps. After assisting the user, it encourages feedback to improve the chatbot's future interactions. Designed with user support and accessibility in mind, this system aims to offer immediate, relevant assistance in navigating complex and often urgent situations, providing a valuable resource for those in need of help with either domestic violence or land disputes. By focusing on these critical issues, the project seeks to empower users with the information and tools needed to take action and seek support when facing difficult circumstances.

Keywords: Machine Learning, Sentiment Analysis, Natural Language Processing (NLP), Text Classification, Deep Learning.

I. INTRODUCTION

A chatbot is an AI-powered software designed to simulate conversation with users, offering an interactive and automated way to provide information, support, or services. By leveraging Natural Language Processing (NLP), Chatbots can understand and respond to text or voice inputs in a manner that resembles human conversation. They are used across a variety of industries, including customer service, healthcare, education, and finance, to answer questions, perform tasks, and assist with decision-making. Chatbots can be deployed on websites, mobile apps, social media platforms, and messaging services, allowing users to access help anytime, anywhere. Their ability to handle multiple inquiries simultaneously helps organizations improve efficiency and customer satisfaction while reducing the burden on human staff. While chatbots can handle simple, repetitive tasks, more advanced versions, often referred to as intelligent chatbots, are capable of understanding complex queries, providing personalized recommendations, and even learning from past interactions to improve their performance over time. This project aims to develop a chatbot designed to assist individuals facing two significant social issues: domestic violence and land grabbing. The chatbot acts as an interactive assistant, guiding users through a series of questions to determine the nature of their concern. Once the issue is identified, the system provides relevant information, resources, and next steps tailored to the user's situation. Whether the issue involves personal safety or property disputes, the chatbot ensures that users receive immediate, context-specific guidance, empowering them to take informed actions. The chatbot also offers users access to critical resources, such as helplines, shelters, legal aid, and advocacy groups, depending on their needs. Additionally, the chatbot can guide users through the reporting process, helping them connect with the appropriate authorities or organizations for further assistance. By leveraging conversational AI, this project aims to make vital support systems more accessible, offering timely help to individuals who may otherwise struggle to find the information or support they need.

II. LITERATURE REVIEW

In this sector, various contributions have been made. Certain research works show the contribution through their studies and proven effective in this field.

Project	Conference	Related Work
AI Chatbot for Legal Assistance; by Pranav Gupta et al. [1]	International Conference on Artificial Intelligence and Law (ICAIL), 2021	Developed an AI chatbot capable of providing legal guidance on civil and criminal matters. The chatbot utilized NLP and legal databases to assist users in understanding legal processes.
Conversational AI for Crisis Support; by Jennifer Brown et al.[2]	IEEE Conference on Human-Centered AI, 2022	Designed a chatbot system to provide psychological and legal support for individuals experiencing crises, including domestic violence. The study evaluated chatbot effectiveness in delivering relevant support resources.
AI-Based Legal Chatbot for Land Dispute Resolution; by Rahul Sharma et al.[3]	International Conference on Smart Technologies for Justice, 2023	Proposed an NLP-based chatbot to assist individuals in resolving land-related disputes. The chatbot analyzed user queries and provided legal references and procedural guidance
AI-Powered Domestic Violence Support System; by Sarah Anderson et al.[4]	Journal of AI and Social Welfare, 2020	Developed a chatbot integrated with emergency services and legal aid platforms to provide real-time assistance to victims of domestic violence, ensuring privacy and safety.
Legal Chatbot for Public Awareness and Assistance; by Rakesh Verma et al [5]	International Journal of Law and Technology, 2021	Explored the implementation of AI-driven chatbots to educate users on legal rights and procedures , reducing dependency on legal professionals for basic queries
NLP-Based Chatbot for Social Welfare Support; by Maria Gonzalez et al.[6]	ACM Symposium on AI for Good, 2022	Designed a chatbot to assist vulnerable individuals in finding legal and psychological support services, emphasizing ease of use and accessibility

III. RESEARCH METHODOLOGY

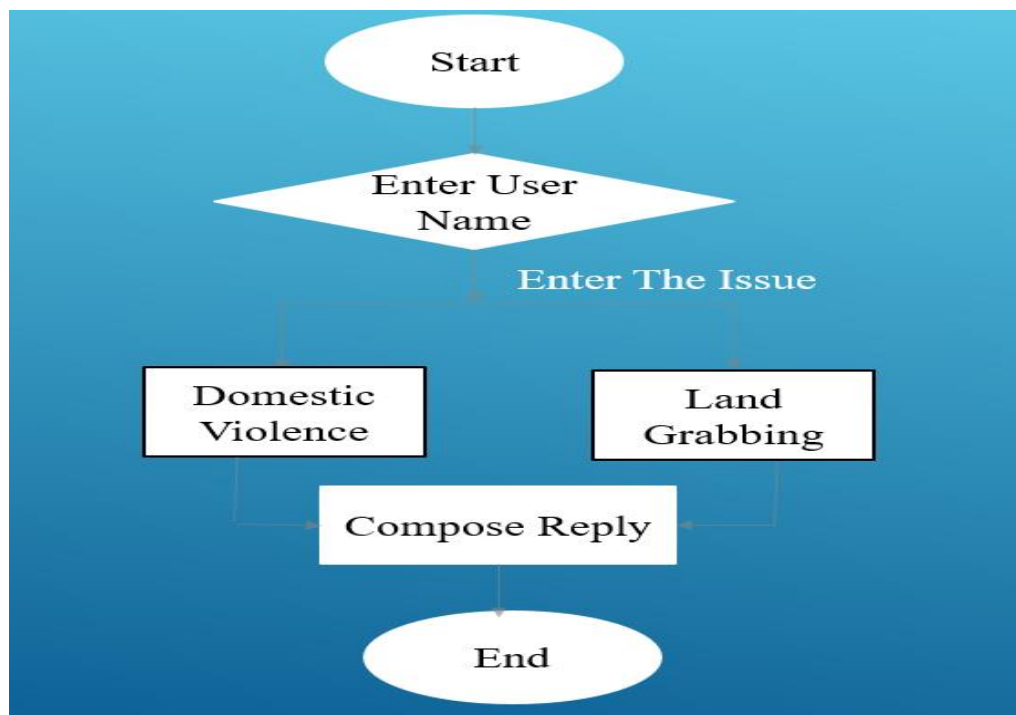
The development of the chatbot for addressing domestic violence and land grabbing follows a systematic research approach, incorporating data analysis, machine learning techniques, and natural language processing (NLP) methods.

The dataset for this study is collected from various sources, including legal documents, case reports, online discussion forums, and government publications from 2018 to 2023. Additionally, publicly available datasets related to domestic violence and land disputes are analyzed to understand linguistic patterns and user concerns [1][3][5].

A detailed analysis is conducted using Java-based libraries such as Apache Commons Math, Weka, JFreeChart, and Stanford NLP. Initial data exploration identifies common keywords, phrases, and conversational patterns associated with domestic violence and land grabbing cases. Sentiment analysis and intent recognition are performed to classify user inputs into relevant categories, ensuring the chatbot responds appropriately and provides accurate guidance [2][4].

Data preprocessing includes text cleaning by removing null values, punctuation, special characters, and stop words such as "the," "and," and "but." Tokenization, stemming, lemmatization, and part-of-speech tagging are applied to optimize text-processing accuracy. A word cloud is generated to visualize frequently occurring terms, helping refine the chatbot's knowledge base [6].

A machine learning pipeline is developed to enhance the chatbot's ability to classify user queries effectively. Various models, including Support Vector Machines (SVM), Random Forest, and deep learning-based NLP models such as BERT and LSTM, are trained using a labeled dataset. The model with the highest accuracy is selected for chatbot integration. Additionally, Named Entity Recognition (NER) is implemented to identify crucial details such as locations, legal terms, and victim or perpetrator references [1][3].



IV. CONCLUSION

This project successfully integrates a **Natural Language Processing (NLP)-powered chatbot** to assist individuals facing **domestic violence and land grabbing** issues. By leveraging **advanced NLP techniques, sentiment analysis, and machine learning models**, the chatbot automates **user query processing, classification, and guidance**, offering a structured and interactive approach to providing critical support.

The chatbot enhances **accessibility and efficiency** by offering real-time responses, personalized recommendations, and direct access to legal aid and emergency resources. Its ability to accurately classify user concerns, identify relevant information, and guide individuals toward appropriate actions ensures **faster decision-making and improved service delivery** in sensitive situations.

This project demonstrates the potential of **AI-driven conversational agents** in addressing **social issues**, empowering users with timely and relevant information. Future enhancements, such as **integration with legal support platforms and real-time**

assistance services, will further strengthen the chatbot's impact, making it a valuable tool for individuals seeking guidance and support in critical situations.

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