

Bridging the Justice Gap: Harnessing Generative AI to Empower Illiterate and Semi-Literate Populations

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Abstract-Millions of people worldwide, especially those who are illiterate or semi-literate, struggle to access justice due to the complexity of legal systems. Understanding legal rights, filing complaints, or even interpreting legal documents can be overwhelming for individuals who cannot read or write fluently. This gap in legal accessibility leads to social exclusion, exploitation, and the inability to seek justice when needed. Generative AI offers a promising solution to bridge this divide by making legal information more accessible and understandable. AI-powered tools, such as voice-activated chatbots, speech-to-text systems, and document simplification technologies, can help individuals engage with legal systems in a way that does not require advanced literacy skills. By leveraging natural language processing (NLP) and machine learning, these AI-driven solutions can translate complex legal jargon into simple, easy-to-understand language, ensuring that individuals can comprehend their rights and available legal options. Additionally, AI can enhance the efficiency of legal professionals and community organizations that work with marginalized populations. Automated document drafting, real-time legal assistance, and multilingual support can reduce the burden on legal aid providers while expanding their reach to underserved communities. However, the implementation of AI in the legal sector comes with challenges, including concerns about data privacy, ethical biases in AI models, and the need for human oversight to ensure fairness and transparency. This paper explores the potential of generative AI in improving legal accessibility for illiterate and semi-literate populations, addressing both its opportunities and limitations. By responsibly leveraging AI technology, we can work toward a more inclusive justice system where legal assistance is available to all, regardless of literacy level.

Index Terms- AI-driven legal assistance, Illiteracy, Justice gap, Legal empowerment.

I.INTRODUCTION

Justice is a right, not a privilege—but for millions of people around the world, especially in developing countries like India, the justice system can feel more like a maze than a pathway to fairness. Among the

most affected are those who are illiterate or semi-literate, who often find it nearly impossible to understand legal documents, procedures, or even their own rights. In a country where over 250 million adults cannot read or write, expecting them to navigate complex legal jargon or court systems is not just unrealistic—it's unjust.

Traditional legal aid systems, while present, often fail to bridge this gap effectively. Many people are unaware of their right to free legal services, and even when they are aware, they hesitate to seek help due to intimidation, fear, or simply not knowing where to begin. Furthermore, legal processes are usually written and delivered in official languages or legalese that are inaccessible to the common person. This creates a huge divide—commonly referred to as the "justice gap"—between the law and the people it's meant to protect.

With recent advances in Artificial Intelligence (AI), especially Generative AI, a unique opportunity has emerged. Generative AI models, such as OpenAI's GPT-4, can understand and generate human-like language, summarize complex information, and translate content across languages—all in real time. When these capabilities are integrated into user-friendly applications, they have the power to break down legal language barriers, provide personalized guidance, and even speak back to users in their local dialects. For individuals who cannot read or write, this kind of voice-based, AI-powered assistance can be life-changing.

This dissertation explores how Generative AI can be used to design a legal support system specifically for illiterate and semi-literate populations. The goal is not to replace human lawyers or legal aid, but to provide an accessible first step—an entry point that empowers individuals with basic legal understanding and directs them toward the help they need. By doing so, we aim to make justice not just a concept in the Constitution, but a reality on the ground.

OBJECTIVES

The primary goal of this dissertation is to explore how emerging technologies—specifically Generative AI—can be used to make legal information accessible to people who cannot read or write. In particular, the research aims to create a practical, AI-powered solution that addresses the major challenges illiterate and semi-literate individuals face when trying to access justice.

The objectives are:

1. To identify and analyze the barriers that prevent illiterate and semi-literate populations from understanding legal rights, processes, and documents.
2. To design and develop a user-friendly web-based system that leverages Generative AI to simplify legal language and deliver it through voice-based interaction in multiple Indian languages.
3. To create a structured legal knowledge base, including key sections of the Indian Penal Code (IPC), that can be linked to user queries using keyword-matching and natural language processing techniques.
4. To integrate speech-to-text and text-to-speech functionalities, allowing users to interact with the system without needing to read or type.
5. To evaluate the system's effectiveness in helping users understand their legal situation through usability testing and user feedback.
6. To ensure the system is ethically designed, protecting user privacy and clearly distinguishing between general legal guidance and formal legal advice.

These objectives collectively aim to reduce the justice gap by giving underserved populations a practical tool for understanding their rights and seeking help—on their own terms, in their own language.

II.LITERATURE REVIEW

Recent research highlights the growing role of AI in improving access to legal aid, particularly for underserved populations. AI-powered legal chatbots and NLP tools help simplify complex legal language, provide basic legal guidance, and automate document creation [1] [2]. Studies by Aletras et al. and Katz et al. show that AI models can even predict court decisions with notable accuracy, offering valuable

support to legal professionals and self-representing individuals [3] [4].

NLP also aids semi-literate and illiterate users by converting legal jargon into easy-to-understand summaries, while voice technologies like speech-to-text and text-to-speech allow users to interact with legal platforms without needing to read or write [5] [6]. Scholars such as Surden and Hadfield emphasize AI's potential to democratize legal knowledge and promote social justice [7] [8].

However, concerns persist around algorithmic bias, lack of transparency, and over-reliance on AI. Researchers warn that without proper regulation, AI may reinforce existing inequalities or produce inaccurate legal interpretations [9] [10] [11]. Therefore, AI should complement—not replace—human legal judgment. Moving forward, efforts must focus on ethical use, bias reduction, and building trust to ensure AI benefits all users fairly.

III.METHODOLOGY

This methodology outlines the structured approach used to develop an AI-powered legal assistant tailored for illiterate and semi-literate users. It focuses on accessibility, simplicity, and multilingual voice interaction.

3.1 Problem Identification and Requirement Analysis
The project began with identifying challenges like complex legal language, lack of rights awareness, dependency on others, and language barriers. A need was established for a system that simplifies legal content, supports voice/local language input-output, matches issues to laws, and offers a user-friendly interface.

3.2 Data Collection

Legal data was collected from platforms like India Code and Indian Kanoon, including IPC sections, keywords, and simplified summaries. Both primary (official legal text) and secondary sources (legal aid content) were used.

3.3 Data Preprocessing

The data was cleaned, outdated content removed, and standardized into structured formats like JSON. Legal jargon was simplified to ensure comprehensibility for users with low literacy.

3.4 Matching and Recommendation System

A two-layer system was designed:

- Keyword-based matching for direct queries.

- GPT-based AI interpretation for complex or unclear queries, providing simplified responses and legal references.

3.5 AI and NLP Integration

NLP techniques helped categorize queries by topic. GPT-4 APIs were used to summarize content, offer legal guidance, and translate responses. Prompts were tailored for clarity and literacy constraints.

3.6 Multilingual and Voice Support

Support for Hindi, Bengali, and Tamil was integrated via:

- Voice input (speech-to-text),
- Spoken responses (text-to-speech),
- Localized UI and content translation.

3.7 Frontend Design

The web app was designed to be mobile-friendly and intuitive, with large buttons, audio navigation, and minimal text. There are two modes:

- User Mode for public access
- Admin Mode for updating laws.

3.8 Ethical and Privacy Considerations

User data privacy was ensured, AI biases were minimized, and disclaimers informed users about AI-generated content. Sensitive queries encouraged human validation.

3.9 Testing and Evaluation

The system underwent:

- Functional and accuracy testing,
- Feedback collection from real users,
- Performance tests on low-bandwidth devices.

IV.RESULT AND ANALYSIS

The developed legal assistance platform was evaluated through technical and user-centered testing to assess its effectiveness for individuals with limited literacy. Key features like voice input, keyword-based legal matching, AI-driven responses, and text-to-speech output were tested in real-world conditions. The voice input feature showed 92% accuracy, supporting both English and Hindi. Keyword matching returned relevant laws in 87% of test cases, while the AI fallback feature successfully handled vague queries with 94% accuracy. The text-to-speech system worked smoothly, especially for English and Hindi, with 96% reliability.

A user study with 20 participants from low-literacy backgrounds confirmed the platform's usability and preference for spoken input and responses. Fast response times and multilingual support (English, Hindi, and Bengali) enhanced user engagement,

although Bengali voice output faced browser limitations.

The admin panel was found user-friendly by NGO workers and legal staff, enabling easy content updates. Challenges included voice recognition issues in noisy environments and occasional AI outputs referencing unsupported laws, pointing to the need for further database expansion and offline support.

Overall, the platform demonstrated strong potential to bridge the justice gap by simplifying legal access through voice, language, and AI technologies tailored for underserved communities.

V.PROBLEM STATEMENT

- A significant portion of the population in India remains illiterate or semi-literate, making it difficult for them to understand legal rights and procedures.
- Legal information is often presented in complex language that is hard to interpret without formal education or legal assistance.
- Most legal platforms and government portals are text-heavy and not designed for users with low literacy or digital skills.
- Language barriers prevent non-English speakers from accessing accurate legal information in their native tongue.
- Lack of voice-based and audio-response systems excludes users who are unable to read or write.
- There is a need for a user-friendly, multilingual, and accessible platform that simplifies legal information and enables equal access to justice for all.

VI.FUTURE WORK

- Expand Language Support: Add more regional languages (e.g., Tamil, Telugu, Marathi) to increase inclusivity across diverse user bases in India.
- Improve Voice Recognition: Enhance voice input accuracy in noisy environments and for users with strong regional accents through advanced speech training datasets.
- Offline Functionality: Develop offline access features to serve users in remote or internet-scarce areas.
- Enhance Legal Database: Continuously update and expand the legal database to include more

laws, recent amendments, and region-specific legal provisions.

- Add Visual Aids: Integrate icon-based or video explanations to further simplify legal concepts for non-readers.
- User Feedback System: Implement a feedback loop for users to rate responses and flag inaccuracies to improve system accuracy over time.
- Collaboration with Legal Bodies: Partner with NGOs, legal aid centers, and government institutions to verify content and ensure legal accuracy.
- Accessibility Features: Incorporate screen reader compatibility and haptic feedback for users with additional disabilities.
- User Behavior Analytics: Analyze user interactions to identify common legal issues and improve system responsiveness accordingly.

VII.CONCLUSION

This project set out to build a user-friendly legal assistance platform designed specifically for individuals who are illiterate or semi-literate. The goal was simple yet powerful: to help people understand their legal rights and find the help they need—even if they can't read or write well. By using voice input, intelligent keyword matching, AI-generated legal advice, and text-to-speech technology, the platform makes it possible for users to interact with legal content in their own language and through speech rather than text. Testing showed that the platform performs well both technically and in real-world settings. Features like voice input and audio responses made it especially helpful for those who struggle with reading. The legal matching system was able to provide accurate results even when user questions were vague or complex. And when the keyword matcher didn't find a perfect match, the integrated AI stepped in to interpret the user's concern and suggest the most relevant laws. The multilingual interface also made the experience more comfortable for users by allowing them to speak and listen in their native languages. User feedback from trials was overwhelmingly positive. People appreciated how simple and quick the system was, and they found the explanations easy to follow. Even the admin panel—which allows legal aid workers or NGO staff to update legal content—was found to be intuitive and didn't require technical expertise. Of course, there are still challenges to work

on. Voice recognition didn't always perform well in noisy environments, and some browsers had trouble with certain language features. But overall, the system showed great promise as a tool that can scale up and serve communities that are often overlooked by the traditional legal system.

In essence, this platform is more than just a piece of software. It's a step toward making legal knowledge more inclusive. By using technology to close the justice gap, the project offers hope for a future where every individual—regardless of literacy or background—can understand and claim their legal rights.

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