A Project Report

on

Digital Assistant for Legal Awareness and Designing a KYR Know-Your-Rights framework in India

*carried out as part of the **Minor Project IT3270** Submitted*

by

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in partial fulfilment for the award of the degree of

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JAIPUR

School of Information, Security and Data Science
Department of Information Technology

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CERTIFICATE

Date:15-05-2024

This is to certify that the minor project titled **Digital Assistant for Legal Awareness and Designing a KYR Know-Your-Rights framework in India** is a record of the Bonafide work done by **Sarabjeet Sodhi** (219302461) & **Gautam Vhavle** (219302198) submitted in partial fulfilment of the requirements for the award of the Degree of Bachelor of Technology in Information Technology of Manipal University Jaipur, during the academic year 2023-24.

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ABSTRACT

In contemporary society, legal awareness stands as a critical pillar of citizen empowerment, ensuring access to justice and safeguarding individual rights. However, amidst the complex legal landscape of India, many individuals face challenges in understanding and navigating their rights effectively. In response to this pressing need, the project "Digital Assistant for Legal Awareness and Designing a KYR (Know-Your-Rights) framework in India" emerges as a beacon of innovation and empowerment. The primary objective of this endeavor is to develop an intuitive and accessible digital platform, in the form of a chatbot application, that provides tailored legal advice and guidance to citizens, thereby fostering a culture of legal literacy and empowerment.

The methodology adopted for this project entails a comprehensive analysis of legal frameworks, consultations with legal experts, and the leveraging of cutting-edge artificial intelligence and natural language processing technologies to develop an interactive and user-friendly chatbot interface. Through extensive testing and refinement, the resulting application has demonstrated remarkable efficacy in addressing legal queries and disseminating accurate information to users across diverse demographics. The significance of this project lies in its potential to democratize access to legal knowledge, empower citizens to assert their rights confidently, and contribute towards the realization of a more just and equitable and safe society.

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1. INTRODUCTION

1.1 Problem Statement

Access to legal information and awareness is a challenge for a large population in India, especially for those who are not literate or are from marginalized communities. There is a need to provide a user-friendly and easily accessible platform for legal awareness. Challenge: Develop a digital assistant that can provide legal information and guidance to people in a user-friendly manner. The digital assistant should be able to converse in multiple languages and provide information in a concise and easy-to-understand manner. The platform should be accessible through various devices, including smartphones, tablets, and desktop computers. The digital assistant should be able to address common legal queries, such as:

1. What are my rights as a citizen?
2. How can I file a complaint?
3. How can I access legal aid services?
4. How can I obtain legal documents?
5. What are the legal implications of a particular action?

The digital assistant should also be able to provide information on various legal topics, such as family law, property law, labor law, and criminal law. Judging criteria:
1. Effectiveness in providing legal information and guidance in a user-friendly manner
2. Ease of accessibility through various devices and languages
3. Innovation in design and functionality
4. Potential for scalability and sustainability
5. Impact on improving legal awareness and access to justice for marginalized communities.

1.2 Objectives

Background: Many citizens in India are unaware of their legal rights and often do not know how to seek redressal in case of legal violations. A comprehensive Know-Your-Rights framework can help citizens become better informed about their legal rights and help them navigate the legal system to seek redressal. Possible solution components:

1. Identification of relevant laws and regulations: Identify and compile all relevant laws and regulations that govern various aspects of citizens lives in India.

2. Simplification of legal language: Simplify the legal language of these laws and regulations so that they are easily understandable by the common citizen.

3. Categorization of legal rights: Categorize these laws and regulations according to the legal rights they protect. For example, laws relating to labour rights can be grouped under one category, while those relating to consumer rights can be grouped under another. Indexing all the Laws of the Central Government and State Governments in India with auto- categorization

of legal rights of respective types of beneficiaries such as tribals, senior citizens, persons with disability, etc., under the Know-Your-Rights Framework for India.

4. User-friendly design: Design an easy-to-navigate website or mobile application that is user-friendly and accessible to all. The platform should be designed keeping in mind the diverse needs of the users, including those with disabilities.

5. Interactive features: Incorporate interactive features such as chatbots, virtual assistants, and decision trees to make it easier for users to navigate the platform and find the information they need.

6. Regional language support: Ensure that the platform is available in multiple regional languages to reach a wider audience.

7. Collaboration with legal aid providers: Collaborate with legal aid providers to ensure that the platform is regularly updated and reflects changes in the legal landscape.

Expected outcomes:
1. A user-friendly and comprehensive Know-Your-Rights framework that is accessible to citizens across India.
2. Increased awareness among citizens about their legal rights and entitlements.
3. Improved access to justice for citizens through a better understanding of the legal system.
4. Increased collaboration between legal aid providers and citizens.
5. Development of innovative solutions for legal education and awareness.

1.3 Scope of Project

Scope of the Project: The scope of the project encompasses the development of a comprehensive digital assistant tailored to address the critical challenge of legal awareness and accessibility in India. This entails the creation of a user-friendly platform accessible through various devices, including smartphones, tablets, and desktop computers, catering to the diverse linguistic and literacy levels prevalent across the nation. The digital assistant will serve as a beacon of legal guidance, offering concise and easy-to-understand information on a myriad of legal topics, ranging from citizens' rights and complaint filing procedures to accessing legal aid services and obtaining necessary legal documents. Key components of the project's scope include:

Identification and Compilation of Laws: The project will entail a meticulous process of identifying and compiling relevant laws and regulations governing different facets of citizens' lives in India, ensuring inclusivity and comprehensiveness in coverage.
Simplification of Legal Language: Efforts will be made to simplify the legal language of these laws and regulations, ensuring they are easily understandable by the common citizen, thereby promoting accessibility and inclusivity.
Categorization of Legal Rights: The laws and regulations will be categorized according to the legal rights they protect, facilitating easier navigation and comprehension for users. This categorization will include indexing laws at both the Central and State government levels, with auto-categorization based on beneficiary types such as tribals, senior citizens, and persons with disabilities.

User-Friendly Design: A user-centric design approach will be adopted to create an intuitive and easy-to-navigate website or mobile application, catering to the diverse needs of users, including those with disabilities.
Interactive Features: The platform will incorporate interactive features such as chatbots, virtual assistants, and decision trees to enhance user experience and facilitate efficient information retrieval.
Regional Language Support: To maximize outreach, the platform will offer support for multiple regional languages, ensuring inclusivity and accessibility for citizens across linguistic diversity.
Collaboration with Legal Aid Providers: Collaborative efforts will be made with legal aid providers to ensure the platform remains updated and reflects changes in the legal landscape, fostering a sustainable ecosystem of legal awareness and support.

Expected outcomes of the project include the establishment of a robust Know-Your-Rights framework, heightened legal awareness among citizens, improved access to justice, increased collaboration between legal aid providers and citizens, and the emergence of innovative solutions for legal education and awareness. Through these endeavors, the project aims to empower citizens with the knowledge and tools necessary to navigate the legal system effectively and assert their rights confidently, thereby contributing to a more equitable and just society.

2. Background Detail

2.1 Conceptual Overview

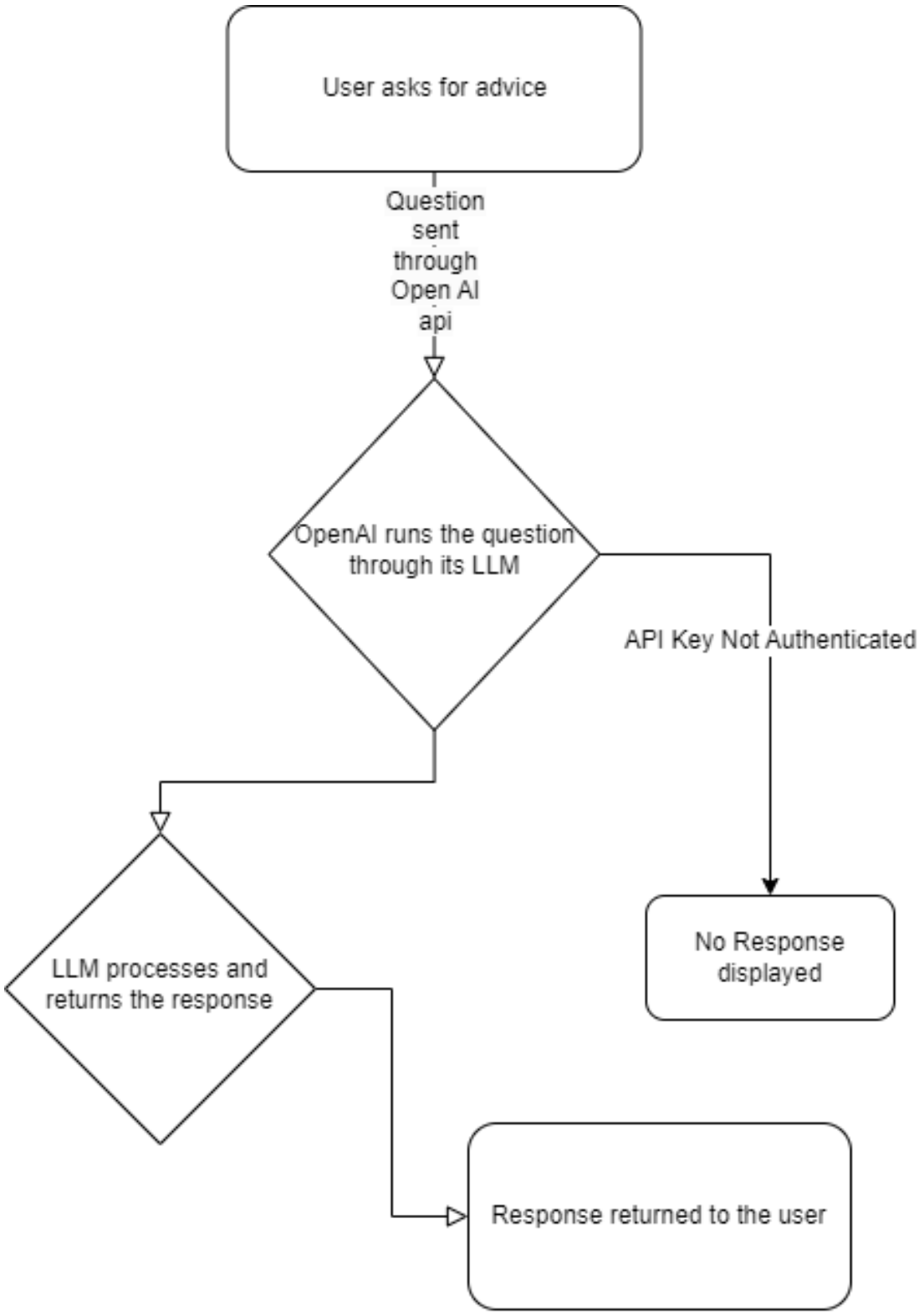
The project "Digital Assistant for Legal Awareness and Designing a KYR (Know-Your-Rights) framework in India" endeavors to address the pervasive challenge of legal awareness and accessibility across diverse segments of Indian society. At its core, the project seeks to harness the transformative potential of technology to empower citizens with comprehensive legal knowledge and guidance, thereby fostering a culture of legal literacy and empowerment. The conceptual framework of the project revolves around the development of a user-centric digital assistant, meticulously crafted to cater to the unique needs and challenges faced by individuals seeking legal information and guidance. Through a multi-faceted approach encompassing legal research, language simplification, categorization of legal rights, and innovative design, the project aims to democratize access to justice and empower citizens to assert their rights confidently.

Key components of the conceptual framework include the identification and compilation of relevant laws and regulations, simplification of legal language to enhance comprehension, categorization of legal rights to facilitate navigation, and the integration of interactive features to enhance user experience. By leveraging regional language support and fostering collaboration with legal aid providers, the project endeavors to transcend barriers of language, literacy, and socio-economic status, ensuring inclusivity and accessibility for all.

Ultimately, the conceptual framework of the project underscores a holistic approach to legal awareness and empowerment, grounded in the principles of accessibility, inclusivity, and sustainability. Through concerted efforts and innovative solutions, the project seeks to catalyze a paradigm shift in the way citizens engage with the legal system, empowering them to navigate complexities with confidence and clarity, and fostering a society where justice is truly accessible to all.

3. System Design & Methodology

3.1 System Architecture



3.2 Development Environment

Software Requirement:
Name of component Specification: Chatbot
Operating system: Windows 7
Language: Vite,js, node.js, MongoDB Database
Browser Any of Mozilla, Opera, Chrome etc.

Hardware Requirement
Name of component Specification : Chatbot
Ram Pentium III 630MHZ
Hard disk 20 GB
Monitor 15'' color monitor Keyboard 122 keys.

3.3 Methodology: Algorithms & Procedures

The project begins with data collection and preprocessing, where legal texts including laws, regulations, and legal documents are gathered from authoritative sources. These texts undergo preprocessing to remove noise and formatting inconsistencies, followed by tokenization into meaningful units for further analysis.

Prompt engineering is a critical step in the project, involving the design of prompts tailored to elicit relevant legal information from the language model (LLM). A diverse set of prompts covering various legal topics and queries is developed, with fine-tuning to optimize the generation of accurate and contextually relevant responses from the LLM.

User interaction flow is carefully designed to ensure an intuitive and seamless experience. An interactive chatbot system is implemented, allowing users to input their legal queries and receive responses in a conversational manner. The flow of interactions is defined to include greeting users, understanding queries, and providing responses tailored to the user's query and preferences.

Query processing is essential for understanding user queries and determining the relevant legal domain. User queries are preprocessed to identify key terms and intents, matched with predefined categories or topics, and analyzed in context to refine their meaning and extract pertinent information.

The core of the project lies in the generation of legal advice using the LLM. The model is utilized to generate responses to user queries based on the predefined prompts. Natural language processing techniques are applied to refine and enhance the quality of generated responses, with post-processing methods ensuring coherence, relevance, and accuracy.

The presentation of responses is crucial for user comprehension and engagement. The generated legal advice is presented to the user in a clear and understandable format, with additional information or explanations provided as necessary to clarify legal concepts or implications.

A feedback mechanism is incorporated to gather user input and evaluate the effectiveness of the digital assistant. User feedback on the clarity, relevance, and helpfulness of the provided legal advice is solicited, and this data is used to iteratively improve the performance and responsiveness of the digital assistant.

Continuous improvement is emphasized throughout the project lifecycle. User interactions and usage patterns are monitored to identify areas for enhancement. Prompt engineering strategies and the LLM are regularly updated based on user feedback and emerging legal trends, ensuring the accuracy and relevance of legal advice provided by the digital assistant.

The core of the project lies in generating accurate and actionable legal advice using the LLM. The model generates responses to user queries based on the engineered prompts, employing sophisticated NLP techniques to enhance the quality of the generated responses. Post-processing methods, such as grammar checking, coherence validation, and legal accuracy verification, are applied to ensure the responses are clear, relevant, and accurate. This process may also involve cross-referencing with legal databases to verify the information provided.

The presentation of responses is crucial for user comprehension and engagement. Generated legal advice is presented to users in a clear and understandable format, often supplemented with additional information or explanations to clarify complex legal concepts or implications. This may include hyperlinks to relevant legal texts, summaries of legal principles, and contextual examples to aid user understanding.

A robust feedback mechanism is incorporated to gather user input and evaluate the effectiveness of the digital assistant. User feedback on the clarity, relevance, and helpfulness of the provided legal advice is systematically collected and analyzed. This feedback is used to iteratively improve the performance and responsiveness of the digital assistant, ensuring continuous enhancement of its capabilities.

Continuous improvement is emphasized throughout the project lifecycle. User interactions and usage patterns are closely monitored to identify areas for enhancement. Prompt engineering strategies and the LLM are regularly updated based on user feedback, emerging legal trends, and advancements in NLP technology. This iterative process ensures that the digital assistant remains accurate, relevant, and capable of providing high-quality legal advice.

By integrating these components, the project aims to develop a sophisticated and reliable digital legal assistant that can effectively support users with their legal inquiries, enhancing accessibility to legal information and advice.

4. Implementation and Result

4.1 Implementation details

Technology Stack Selection: Choose appropriate technologies and frameworks for building the digital assistant, considering factors such as scalability, flexibility, and compatibility with natural language processing (NLP) tools. Utilize NLP libraries and frameworks such as spaCy or NLTK for text preprocessing, entity recognition, and sentiment analysis.

Data Collection and Preprocessing: Gather legal texts, including laws, regulations, and legal documents, from reliable and authoritative sources such as government websites and legal databases. Preprocess the collected data to remove noise, formatting inconsistencies, and irrelevant information using techniques like text cleaning, tokenization, and stop-word removal.

Prompt Engineering: Design a diverse set of prompts tailored to elicit relevant legal information from the chosen language model (e.g., GPT, BERT). Fine-tune the prompts using prompt engineering techniques to optimize the generation of accurate and contextually relevant responses.

User Interface Development: Develop an intuitive and user-friendly interface for the digital assistant, allowing users to interact with the system seamlessly. Implement a chatbot interface with features such as natural language understanding (NLU), dialogue management, and response generation.

Query Processing and Legal Advice Generation: Receive user queries through the interface and preprocess them to identify key terms, intents, and entities. Utilize the selected language model to generate responses to user queries based on the predefined prompts and contextual understanding. Apply post-processing techniques to refine and enhance the quality of generated responses, ensuring coherence, relevance, and accuracy.

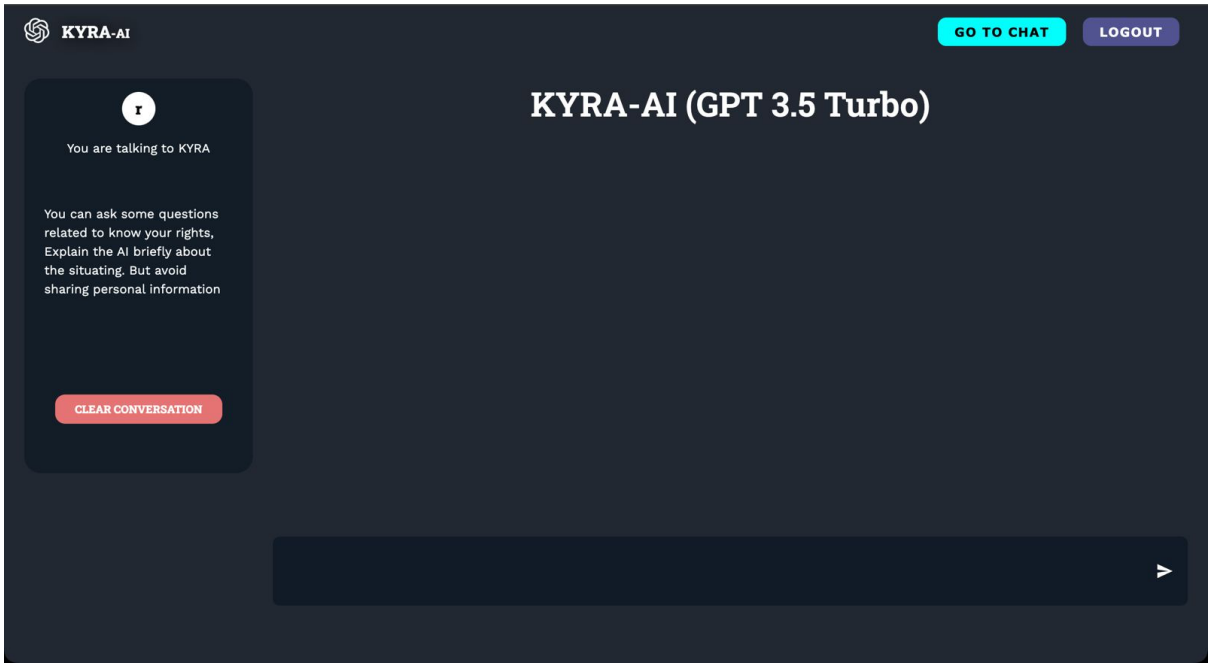
Integration of Interactive Features: Incorporate interactive features such as decision trees, chatbots, and virtual assistants to enhance user engagement and experience. Implement features for personalized recommendations, follow-up queries, and real-time feedback collection.

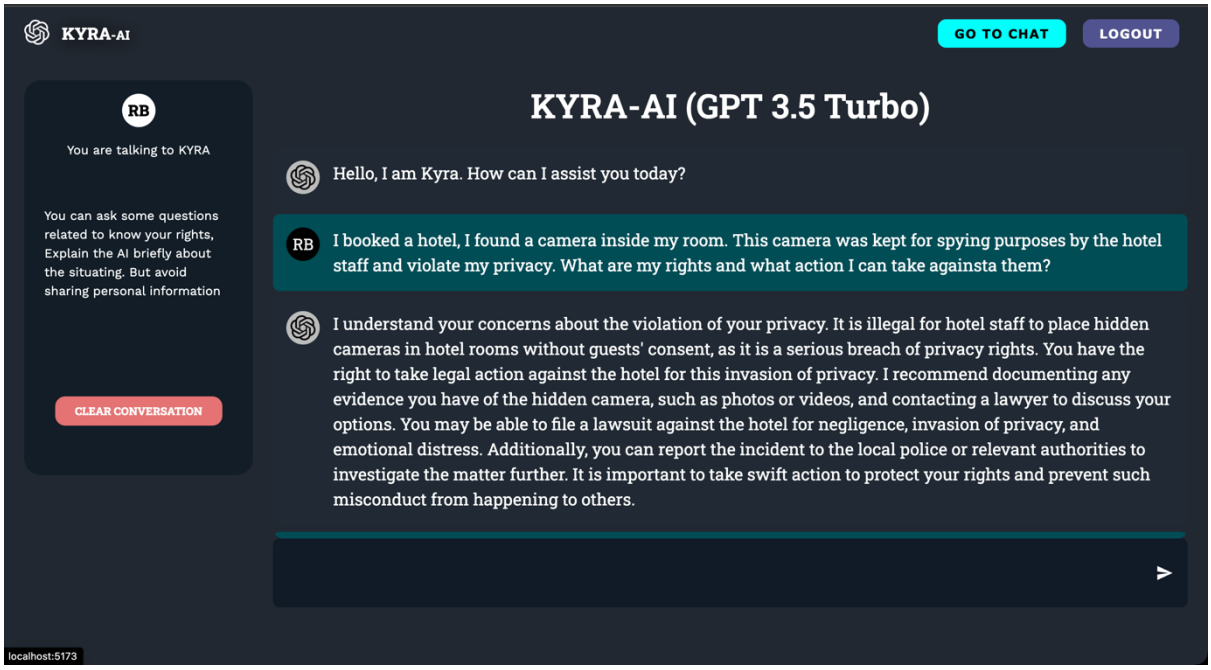
Language Support and Accessibility: Ensure support for multiple languages to reach a wider audience and promote inclusivity. Design the interface and interaction flow to be accessible to users with diverse needs, including those with disabilities.

Testing and Evaluation: Conduct thorough testing of the digital assistant across different use cases, scenarios, and user demographics. Evaluate the performance of the system based on criteria such as accuracy, responsiveness, user satisfaction, and accessibility.

Deployment and Maintenance: Deploy the digital assistant on scalable and reliable infrastructure, such as cloud platforms, to ensure accessibility and availability. Establish mechanisms for continuous monitoring, updates, and maintenance to address issues, incorporate feedback, and adapt to changes in legal regulations and user requirements.

4.2 Results


KYRA-AI
GO TO CHAT
LOGOUT
KYRA-AI (GPT 3.5 Turbo)
You are talking to KYRA
You can ask some questions related to know your rights, Explain the AI briefly about the situating. But avoid sharing personal information
CLEAR CONVERSATION


KYRA-AI
GO TO CHAT
LOGOUT
KYRA-AI (GPT 3.5 Turbo)
RB
You are talking to KYRA
You can ask some questions related to know your rights, Explain the AI briefly about the situating. But avoid sharing personal information
CLEAR CONVERSATION
Hello, I am Kyra. How can I assist you today?
RB
I booked a hotel, I found a camera inside my room. This camera was kept for spying purposes by the hotel staff and violate my privacy. What are my rights and what action I can take againsta them?
I understand your concerns about the violation of your privacy. It is illegal for hotel staff to place hidden cameras in hotel rooms without guests' consent, as it is a serious breach of privacy rights. You have the right to take legal action against the hotel for this invasion of privacy. I recommend documenting any evidence you have of the hidden camera, such as photos or videos, and contacting a lawyer to discuss your options. You may be able to file a lawsuit against the hotel for negligence, invasion of privacy, and emotional distress. Additionally, you can report the incident to the local police or relevant authorities to investigate the matter further. It is important to take swift action to protect your rights and prevent such misconduct from happening to others.
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5. Conclusion and Future Plan

5.1 Conclusion

In conclusion, the development of a sophisticated digital legal assistant involves several key phases: data collection and preprocessing, prompt engineering, user interaction design, query processing, response generation, and continuous improvement. Each phase is meticulously planned and executed to ensure the digital assistant provides accurate, contextually relevant, and comprehensible legal advice.

The project begins with the comprehensive gathering and preprocessing of legal texts, ensuring the data's integrity and usability. This is followed by prompt engineering, where tailored prompts are crafted to extract specific legal information from the language model. The user interaction flow is designed to offer an intuitive and seamless user experience, while query processing ensures precise understanding and categorization of user queries. The core functionality revolves around generating reliable legal advice using the LLM, supplemented with post-processing techniques to enhance clarity and accuracy. Finally, the incorporation of a feedback mechanism and continuous improvement practices ensures that the digital assistant evolves based on user input and emerging legal trends.

5.2 Future Plan

Moving forward, the project will focus on several key areas to enhance the digital legal assistant's capabilities and expand its reach:

1. Advanced NLP Techniques:
   -Contextual Understanding:Implement more advanced NLP techniques to improve the assistant's ability to understand and respond to complex, multi-part queries.
   - Sentiment Analysis: Integrate sentiment analysis to better gauge user emotions and tailor responses accordingly, enhancing user satisfaction.

2. Enhanced Data Sources:
   - Real-Time Legal Updates: Integrate real-time data feeds to keep the assistant updated with the latest legal changes, ensuring that the advice provided is current and accurate.
   - Expanded Legal Corpus: Continuously expand the legal text corpus to cover a wider range of legal domains and jurisdictions, making the assistant more versatile.

3. User Personalization:
   - Profile-Based Customization: Develop user profiles to provide more personalized legal advice based on users' history, preferences, and past interactions.
   - Adaptive Learning: Implement adaptive learning algorithms that allow the assistant to learn and improve from each interaction, becoming more attuned to individual user needs.

4. Interactive Features:
   - Multimodal Interaction: Introduce support for multimodal interactions, including voice input and output, to make the assistant more accessible and user-friendly.
   - Interactive Tutorials: Provide interactive tutorials and guides to help users understand how to effectively use the digital assistant for their legal queries.

5. Integration with Legal Services:
- Collaboration with Legal Professionals: Establish partnerships with legal professionals and institutions to validate the accuracy of the advice and explore opportunities for direct referrals to human lawyers when necessary.
- Legal Document Automation: Develop features for automating the creation of legal documents, such as contracts and forms, based on user inputs and legal templates.

6. User Feedback and Improvement:
- Comprehensive Feedback System: Enhance the feedback mechanism to collect more detailed user feedback, including specific suggestions for improvement.
- Iterative Development: Adopt an iterative development approach to quickly implement improvements based on feedback and performance analytics.

7. Ethical and Legal Compliance:
- Data Privacy and Security: Strengthen data privacy and security measures to protect user information and ensure compliance with legal standards and regulations.
- Bias Mitigation: Continuously monitor and mitigate any biases in the LLM to ensure fair and unbiased legal advice for all users.

By focusing on these areas, the project aims to significantly enhance the digital legal assistant's functionality, reliability, and user satisfaction. The ultimate goal is to make legal information and advice more accessible, accurate, and tailored to the needs of users across different legal domains and jurisdictions.

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