

**DIGITAL ASSISTANT FOR LEGAL AWARENESS AND  
DESIGNING A KYR KNOW-YOUR RIGHTS FRAMEWORK  
IN INDIA**

**A PROJECT REPORT**

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*Under the guidance of,*

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*in partial fulfillment for the award of the degree of*

**BACHELOR OF TECHNOLOGY**

**IN**

**COMPUTER SCIENCE AND TECHNOLOGY**

**At**



**PRESIDENCY UNIVERSITY**

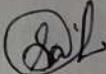
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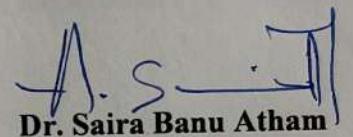
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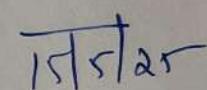
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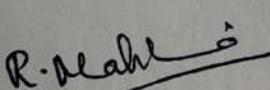
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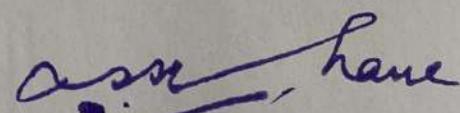
This is to certify that the Project report "**DIGITAL ASSISTANT FOR LEGAL AWARENESS AND DESIGNING A KYR KNOW-YOUR RIGHTS FRAMEWORK IN INDIA**" being submitted by "**Suhaas R, Harshitha M, Meenakumari B M, Supritha G M**" bearing roll number(s) "**20211CSG0019, 20211CSG0014, 20211CSG0032, 20221LCG0006**" in partial fulfillment of the requirement for the award of the degree of **Bachelor of Technology in Computer Science and Technology** is a bonafide work carried out under my supervision.

  
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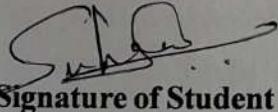
  
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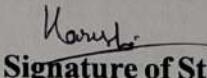
**DECLARATION**

We hereby declare that the work, which is being presented in the project report entitled **DIGITAL ASSISTANT FOR LEGAL AWARENESS AND DESIGNING A KYR KNOW - YOUR RIGHTS FRAMEWORK IN INDIA** in partial fulfillment for the award of Degree of **Bachelor of Technology** in **Computer Science and Technology**, is a record of our own investigations carried under the guidance of **Ms. Sandhya L, Assistant Professor, Presidency School of Computer Science Engineering, Presidency University, Bengaluru.**

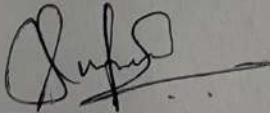
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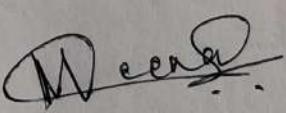
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## **ACKNOWLEDGEMENT**

First of all, we indebted to the **GOD ALMIGHTY** for giving me an opportunity to excel in our efforts to complete this project on time.

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We thank our family and friends for the strong support and inspiration they have provided us in bringing out this project.

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## **ABSTRACT**

In India, where many people are ignorant of their basic rights and entitlements, legal awareness and accessibility continue to be major obstacles. Especially in underprivileged and marginalized communities, this ignorance frequently leads to rights violations and restricted access to justice. This project suggests creating a digital assistant that uses a structured Know-Your-Rights (KYR) framework to improve legal awareness in order to address this problem. In order to provide accurate and easily accessible legal information, guidance, and resources pertaining to a variety of legal domains, including labor laws, women's rights, consumer rights, fundamental rights, and other pertinent areas, the proposed system aims to create a user-friendly platform.

The Digital Assistant is designed to bridge the knowledge gap by offering simplified legal information through an interactive and conversational interface. By organizing legal provisions into clearly defined categories, the KYR framework allows users to quickly and efficiently retrieve information pertinent to their legal concerns. The system's interface is developed to be straightforward and easily navigable, ensuring accessibility for a wide range of users regardless of their technological proficiency. The project aims to empower individuals with the knowledge required to safeguard their rights and enhance legal literacy across diverse sections of society.

Furthermore, the evaluation process involves rigorous usability testing, feedback collection, and performance analysis to ensure the reliability, accuracy, and effectiveness of the platform. By providing accurate, relevant, and timely legal information, the Digital Assistant aims to significantly address the prevalent legal knowledge gap and promote legal inclusivity. This initiative contributes to the broader effort of ensuring justice for all through innovative technological solutions designed to enhance legal awareness and accessibility. Such a platform can serve as a valuable tool in promoting legal empowerment and improving access to justice for individuals who may otherwise be excluded from formal legal support mechanisms.

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## **CHAPTER-1**

### **INTRODUCTION**

The rapid advancement of technology has revolutionized various sectors, providing innovative solutions to address complex and pressing issues. In the legal domain, technological advancements have proven to be powerful tools in enhancing legal awareness, promoting accessibility, and bridging the knowledge gap between legal rights and their practical application. However, despite significant progress, a considerable portion of the Indian population continues to face challenges in accessing accurate legal information. This issue is particularly prevalent among individuals residing in rural areas and those with limited literacy levels. Bridging this gap is essential to ensure justice, promote equality, and empower citizens to exercise their legal rights effectively.

India's legal framework is extensive, encompassing various domains such as fundamental rights, labor laws, consumer rights, women's rights, child protection, property rights, and many others. However, the complexity of legal language and procedures often makes it difficult for the average citizen to understand their rights and navigate the legal system. Furthermore, socio-economic disparities and low literacy rates hinder access to reliable legal information, making it challenging for marginalized communities to seek redressal for violations of their rights. Therefore, there is an urgent need for a system that simplifies legal knowledge and makes it accessible to everyone, regardless of their socio-economic or educational background.

Efforts to promote legal literacy in India have been initiated by various governmental and non-governmental organizations. However, these initiatives are often limited in scope and reach. Traditional methods of spreading legal awareness, such as workshops, pamphlets, and awareness campaigns, are not sufficient to cover the diverse and vast population of the country. Moreover, the legal information provided through these methods is often fragmented and not easily accessible to those who need it the most. Thus, a more comprehensive and technologically driven approach is necessary to address these limitations effectively.

The digital assistant will serve as an intuitive and user-friendly interface accessible through web and mobile platforms. Its core functionality will involve providing accurate and comprehensible legal information related to fundamental rights, labor laws, consumer rights, women's rights, child protection, and other pertinent legal domains. To achieve this, the digital assistant will categorize complex legal provisions into simplified and structured categories, making information retrieval efficient and straightforward.

Furthermore, the integration of Natural Language Processing (NLP) and automated systems will enhance the system's ability to interpret user queries and provide contextually relevant responses. This approach ensures that users can interact with the digital assistant using simple, everyday language without requiring any prior legal knowledge. The system's capability to deliver prompt and reliable responses is expected to improve user experience and increase engagement, thereby promoting legal awareness on a broader scale.

Additionally, the digital assistant will be designed to accommodate India's linguistic diversity, ensuring inclusivity and accessibility for all users. India is home to a multitude of languages and dialects, and many individuals are more comfortable accessing information in their native language. By providing legal information in various regional languages, the system aims to reach underserved populations, including rural communities and marginalized groups, who are often left out of conventional legal literacy initiatives.

The *Know-Your-Rights (KYR) Framework* integrated within the digital assistant will act as a structured repository of legal information, organized in a user-friendly manner. The framework will cover various legal domains, including but not limited to constitutional rights, criminal law, civil law, consumer protection, labor rights, and family law. Each section will be simplified to ensure that the information is easily understandable to the general public. Moreover, the framework will be regularly updated to ensure that the content remains accurate and relevant.

The proposed system also envisions collaboration with legal aid organizations, educational institutions, and community outreach programs. Such partnerships will enhance the dissemination of legal information and empower individuals to navigate the legal system effectively. Through educational campaigns and community engagement, the project aspires to build a culture of legal awareness where every citizen is informed of their rights and responsibilities. Furthermore, the implementation of this digital assistant is expected to democratize access to legal information, providing individuals with the ability to understand their rights and seek justice when needed.

## **CHAPTER-2**

### **LITERATURE SURVEY**

#### **1. Aalap: AI Assistant for Legal & Paralegal Functions in India.**

**Author:** Aman Tiwari, Prathamesh Kalamkar, Atreyo Banerjee, Saurabh Karn, Varun Hemachandran, Smita Gupta.

**Year:** 2024

**Methods:** The authors developed 'Aalap' by fine-tuning the Mistral 7B model on a dataset comprising 22,272 legal instructions and synthetically generated responses, with a maximum input token length of 16,000. The fine-tuned model supports a context length of up to 32,000 tokens, enabling it to handle extensive legal documents.

**Datasets:** The study utilized the following datasets.

- i. **Aalap Instructions Dataset:** Contains 22,272 legal instructions paired with synthetically generated responses, tailored to specific Indian legal tasks.
- ii. **AIBE Dataset:** Comprises 1,158 multiple-choice questions and answers from the past 12 All India Bar Examination (AIBE) exam.

**Results:** Evaluations indicated that Aalap outperformed GPT-3.5-turbo in 31% of the test data and achieved equivalent performance in 34% of the test cases, as assessed by GPT-4. The training emphasized legal reasoning over mere recall, enhancing its applicability in daily legal operations.

#### **2. (A)I Am Not a Lawyer, But...: Engaging Legal Experts towards Responsible LLM Policies for Legal Advice**

**Author:** Inyoung Cheong, King Xia, K. J. Kevin Feng, Quan Ze Chen, Amy X. Zhang

**Year:** 2024

**Methods:** Conducted workshops with 20 legal experts using case-based reasoning to assess when and why large language models (LLMs) should provide legal advice. Presented 33 realistic legal queries ("cases") to experts to examine situation-specific concerns and overarching technical and legal constraints.

**Datasets used:** The study utilized 33 realistic user queries related to legal advice, collected to reflect common legal inquiries encountered in practices.

**Results:** Recommended that LLMs assist users in identifying relevant information and formulating appropriate questions rather than providing definitive legal judgments. Highlighted legal considerations such as unauthorized practice of law, confidentiality, and liability for inaccurate advice.

### **3. A User-Friendly Digital Assistant Providing Legal Information in Different Languages**

**Author:** J. Jeba Stanley, V. Kanisha, K. Nathiya, S. Navanitha,

**Year:** 2024

**Methods:** Developed a digital assistant equipped with a comprehensive legal information database covering topics such as contracts, employment law, property, and family law. Integrated natural language processing (NLP) capabilities to understand and respond to user queries effectively.

**Datasets used:** The paper does not specify the datasets used for training or developing the digital assistant.

**Result Accuracy:** The paper emphasizes the importance of accurate, current, and easily understandable legal information to empower individuals and improve access to justice.

### **4. Design and Implementation of a Chatbot for Automated Legal Assistance using Natural Language Processing and Machine Learning**

**Authors:** Ashok Reddy Kandula, Mothilal Tadiparthi; Pooja Yakkala, Sindhu Pasupuleti, Poojitha Pagolu; Sai Mohana Chandrika Potharlanka.

**Year:** 2022

**Methods:** The proposed AI-based legal assistance system leverages Natural Language Processing (NLP) and Machine Learning algorithms to facilitate efficient legal research. The system is designed to interact with users, including lawyers and general users, by processing their queries and retrieving relevant legal texts. It employs algorithms that recognize significant terms, concepts, and relationships within legal documents, enhancing the relevance of the information retrieved. The retrieved laws are then ranked based on their similarity to the query, using a hit-and-loss scoring mechanism to determine accuracy and relevance.

**Datasets:** The dataset may include publicly available legal databases and custom-annotated datasets created to improve the system's understanding of specific legal domains. The focus is likely on developing a comprehensive dataset that covers multiple aspects of legal language and principles, enabling the model to provide accurate and contextually appropriate responses.

**Results:** The proposed system reportedly achieves an accuracy rate of over 80%, which indicates significant effectiveness in retrieving and ranking pertinent legal information. This high level of accuracy demonstrates the system's ability to minimize errors in legal research and enhance the quality of legal advice provided. The reported accuracy suggests that the AI-based legal assistance system can provide reliable information to legal professionals and general users, thereby improving the efficiency of legal research processes.

## **5. Digital Personal Assistants with AI and Data Protection GDPR & E-**

**Privacy-Reg Author:** Christian Jaksch

**Year:** 2022

**Methods:** The chapter provides an overview of the data protection challenges associated with digital assistants that utilize Artificial Intelligence (AI). It examines the implications of the General Data Protection Regulation (GDPR) and the E-Privacy Regulation on the functionality and compliance of these AI-driven personal assistants.

**Datasets:** The chapter does not specify any datasets used, as it focuses on legal and regulatory aspects rather than empirical data analysis.

**Results:** The chapter primarily discusses the regulatory compliance of AI-driven digital personal assistants under GDPR and the E-Privacy Regulation. It highlights the challenges of ensuring data protection, user consent, and privacy by design in AI systems.

## **6. AI in Legal Services: New Trends in AI-Enabled Legal Services.**

**Authors:** Marcos Eduardo Kauffman and Marcelo Negri Soares

**Year:** 2022

**Methods:** The authors discuss the integration of Artificial Intelligence (AI) into legal services, focusing on the transition from traditional support tools to AI-driven automation of tasks such as document analysis and drafting. They highlight the potential of AI to transform legal practices by improving efficiency and access to justice.

**Datasets:** The article does not specify particular datasets used, as it is an editorial piece discussing trends rather than presenting empirical research.

**Results:** The article discusses the potential benefits of integrating AI into legal services, highlighting improvements in efficiency, accuracy, and access to legal resources. It emphasizes that AI can significantly enhance legal research, document analysis, drafting, and predictive analytics. While quantitative accuracy metrics are not provided, the authors suggest that AI adoption in legal services can streamline processes, reduce operational costs, and improve the quality of legal advice.

## **7. LawPal: A Retrieval Augmented Generation Based System for Enhanced Legal Accessibility in India.**

**Authors:** Dnyanesh Panchal, Aaryan Gole, Vaibhav Narute, Raunak Joshi

**Year:** 2021

**Methods:** The proposed system, *LawPal*, is designed to enhance legal accessibility in India by utilizing a Retrieval-Augmented Generation (RAG) architecture. The system incorporates Facebook AI Similarity Search (FAISS) for efficient vector-based retrieval of legal information, ensuring rapid access to relevant documents. To handle user queries effectively, prompt engineering techniques are employed, allowing the system to process complex or ambiguous legal questions accurately.

**Datasets:** The dataset used for training the LawPal system is composed of various legal texts obtained from authoritative sources. These include legal books, official documentation, the Indian Constitution, government websites, and archives from the Supreme Court.

**Results:** While the paper emphasizes the effectiveness of the LawPal system in improving legal accessibility and providing accurate legal information, specific quantitative accuracy metrics are not provided in the abstract.

## **8. A User-Friendly Digital Assistant Providing Legal Information in Different**

**Languages Author:** J. Jeba Stanley, V. Kanisha, K. Nathiya, S. Navanitha

**Year:** 2021

**Methods:** The paper presents the design and implementation of a digital assistant aimed at providing legal information in multiple Indian languages. The system uses Natural Language Processing (NLP) techniques to process user queries and retrieve relevant legal information from a structured legal information database. The assistant offers explanations, guidance, and resources such as sample legal documents and related links, making the information more accessible and comprehensible.

**Datasets:** The system relies on curated legal texts, government-issued legal documents, statutes, and other publicly available legal resources. The focus appears to be on building a comprehensive and structured database that covers various legal topics relevant to general users.

**Results:** The paper does not provide specific accuracy metrics. Instead, it emphasizes the system's potential to improve access to legal information by making it more understandable and available in different languages. The reported effectiveness is qualitative, highlighting user-friendliness and accessibility rather than precise numerical evaluation.

## **9. Empowering Legal Awareness in India: A Digital Assistant**

**Authors:** Pratik Yeole, Aniket Hate, Atharva Mathpati,

**Year:** 2021

**Methods:** The authors propose developing a digital assistant integrated with a comprehensive "Know Your Rights" (KYR) framework tailored to the needs of Indian citizens. The assistant aims to democratize legal awareness by providing user-friendly access to legal information through both web and mobile platforms. Utilizing Natural Language Processing (NLP) techniques, the system interprets user queries and provides personalized responses, simplifying complex legal language and concepts to make them more accessible to non-experts.

**Datasets:** The paper does not explicitly mention the datasets used. However, it involves compiling and categorizing laws essential to the lives of Indian citizens, suggesting the use of legal texts and regulations relevant to the Indian legal system.

**Results:** The paper does not provide specific accuracy metrics. Instead, it emphasizes the system's potential to improve access to legal information by making it more understandable and available in different languages. The reported effectiveness is qualitative, highlighting user-friendliness and accessibility rather than precise numerical evaluation.

## **CHAPTER-3**

### **RESEARCH GAPS OF EXISTING METHODS**

Despite significant progress in developing AI-based legal assistance systems and digital assistants aimed at improving legal accessibility, several critical gaps remain unaddressed. These gaps limit the effectiveness, scalability, and inclusiveness of existing systems, making them inadequate for widespread deployment, particularly in diverse and complex legal environments like India. A detailed analysis of these gaps is essential for guiding future research efforts towards more robust and user-centric solutions.

#### **1. Limited Multilingual Support:**

While some systems attempt to provide information in multiple Indian languages, most of them lack comprehensive linguistic coverage. The existing systems primarily focus on English and a few other major Indian languages, neglecting the linguistic diversity of the nation. Effective legal assistance requires support for various dialects and regional languages, particularly for underrepresented communities. Developing NLP models that can accurately process legal queries in multiple languages, with high contextual understanding and translation quality, remains a significant challenge.

#### **2. Lack of Comprehensive Datasets:**

Many of the systems reviewed lack clarity about their underlying datasets, often relying on limited or unstructured legal texts sourced from public documents or official websites. A robust AI-driven legal assistant requires well-annotated, structured, and diverse datasets that cover various domains such as criminal law, civil law, family law, labor law, and administrative law. Additionally, these datasets need to be regularly updated to reflect the latest amendments and rulings. The absence of a standardized legal corpus makes it difficult to achieve consistency and reliability in AI-driven legal systems.

#### **3. Absence of Quantitative Evaluation Metrics:**

Most research papers report the effectiveness of their systems through qualitative assessments without

presenting precise quantitative metrics like accuracy, precision, recall, or F1-score. This lack of standardization makes it difficult to compare the performance of various models or systems and hampers efforts to improve them systematically. Implementing reliable evaluation frameworks and benchmarks would enable more consistent assessment and drive progress in legal AI research.

#### **4. Scalability and Efficiency Challenges:**

While certain systems utilize retrieval mechanisms like FAISS for improved efficiency, scalability remains a critical challenge when dealing with vast and continuously growing legal databases. As the volume of legal documents increases, the systems' performance in terms of retrieval speed, response time, and memory usage often deteriorates. Ensuring that the models can process large datasets in real-time without compromising accuracy and efficiency is crucial for practical deployment.

#### **5. Contextual Understanding Limitations:**

Most AI-based legal assistants rely heavily on keyword matching or shallow NLP techniques, which often fail to grasp the deeper context and semantics of complex legal queries. Legal information retrieval frequently requires understanding nuanced relationships between legal concepts, statutes, and case law. Current systems lack advanced contextual analysis and legal reasoning capabilities that are essential for providing accurate and relevant legal advice. Enhancing AI systems with improved comprehension mechanisms remains a substantial research challenge.

#### **6. Insufficient Focus on Personalization:**

Existing systems tend to offer generic responses that do not adequately cater to users with varying levels of legal knowledge and expertise. Personalization mechanisms that can adjust explanations based on the user's familiarity with legal terms and concepts would significantly enhance usability. Moreover, interactive elements that enable users to refine their queries or receive follow-up suggestions are often missing, which limits the overall effectiveness of these systems.

## **7. Inadequate Integration with Legal Frameworks:**

While some systems propose frameworks for enhancing legal awareness, their integration with official legal frameworks and databases remains superficial. Collaboration with governmental bodies, legal professionals, and legal education institutions could greatly enhance the credibility and reliability of these systems. Further research should focus on establishing standardized protocols for data integration and ensuring compliance with relevant legal guidelines.

## **8. Security and Data Privacy Concerns:**

Despite handling sensitive legal information, most systems fail to adequately address data privacy and security concerns. Effective legal assistants must implement robust data protection mechanisms, particularly when dealing with confidential or personal legal queries. Ensuring data privacy through techniques such as differential privacy, encryption, and secure storage protocols is essential to build trust among users and encourage widespread adoptions.

## **CHAPTER-4**

### **PROPOSED METHODOLOGY**

The proposed system aims to develop a comprehensive Digital Assistant for Legal Awareness integrated with a structured Know-Your-Rights (KYR) Framework. This framework is designed to enhance legal accessibility and awareness, especially for marginalized and underrepresented communities. The methodology involves various stages including data collection, preprocessing, model training, user interface development, and system evaluation.

#### **1. Data Collection:**

The initial phase involves gathering a broad range of legal datasets from credible and authoritative sources. These sources include the Indian Constitution, statutory laws like the Indian Penal Code (IPC), Code of Criminal Procedure (CrPC), labor laws, family laws, and other relevant legal provisions. Additionally, the collection process will involve judicial rulings, case law summaries, government-issued legal documents, and reports from non-governmental organizations (NGOs) dedicated to legal awareness. The dataset will be curated to ensure coverage of various legal domains, particularly those affecting vulnerable groups. Special attention will be paid to collecting region-specific legal information to address the diverse needs of Indian citizens.

#### **2. Data Preprocessing:**

To ensure compatibility with Natural Language Processing (NLP) models, the collected data will undergo several preprocessing steps. These steps include text normalization, which involves removing punctuation, special characters, and converting text to lowercase. Sentence segmentation and tokenization will be performed to divide text into manageable units, while lemmatization and stemming will standardize terms by reducing words to their base or root forms. Additionally, irrelevant content will be filtered out to improve the efficiency of the model, and legal texts will be annotated with metadata tags to facilitate improved information retrieval and categorization.

**3. Knowledge Representation and KYR Framework Design:** A structured Know-Your-Rights (KYR) Framework will be developed to organize legal information in a user-friendly manner. This framework will categorize data into various segments such as Rights Awareness (covering fundamental rights, labor rights, consumer rights, etc.), Legal Provisions (detailing relevant sections of laws and regulations), Practical Guidance (providing step-by-step procedures for exercising rights and filing complaints), and Case Studies and Examples (illustrative scenarios for enhanced comprehension).

#### **4. NLP Model Development:**

The proposed system will employ advanced NLP techniques to accurately process and respond to user queries. Techniques such as *Retrieval-Augmented Generation (RAG)* will be used to combine information retrieval with generative capabilities, providing comprehensive answers to complex legal questions. State-of-the-art transformer models like BERT and GPT will be fine-tuned on the curated legal dataset to enhance their understanding of legal terminology and context. Additionally, *Named Entity Recognition (NER)* will be implemented to identify key legal entities, including acts, rights, and judicial bodies, which will improve the contextual understanding of user queries.

#### **5. Multilingual Support:**

Considering the linguistic diversity of India, the system will be designed to provide legal information in multiple regional languages. To achieve this, multilingual NLP models will be fine-tuned using translated datasets for each language. Furthermore, the system will include language-specific modules to enhance the accuracy and relevance of responses. Interactive interfaces will be developed to support users in formulating queries in their preferred languages, thereby making the system accessible to a broader population, including those with limited proficiency in English.

#### **6. User Interface Development:**

A user-friendly interface will be created to enhance the accessibility and usability of the system. The interface will include both text-based chatbots and voice-based assistants to cater to users with varying preferences. Clear instructions and guidelines will be provided to help users formulate their queries effectively.

## **7. Evaluation and Validation:**

The effectiveness of the proposed system will be evaluated through various metrics. Accuracy will be assessed by comparing the system's responses against expert-provided answers, while user satisfaction will be measured by collecting feedback from legal professionals and general users. Scalability will be evaluated by testing the system's performance on large datasets, ensuring it can handle growing legal databases effectively. Additionally, the performance of multilingual support will be tested by evaluating the accuracy of responses across different languages, ensuring inclusivity and applicability.

## **8. Security and Privacy Considerations:**

Given the sensitive nature of legal information, the proposed system will incorporate robust data protection measures. This includes ensuring the secure storage of user queries, implementing anonymization techniques to preserve user privacy, and complying with relevant legal standards for data handling. Additionally, encryption mechanisms will be employed to prevent unauthorized access and ensure the integrity of data. Building user trust through secure data handling practices will be crucial for the widespread adoption of the system.

## **CHAPTER-5**

### **OBJECTIVES**

The primary objective of this project is to develop a comprehensive Digital Assistant for Legal Awareness integrated with a structured Know-Your-Rights (KYR) Framework to enhance accessibility and awareness of legal rights among citizens, particularly those from underrepresented and marginalized communities. This project aims to bridge the gap between legal information and the public by providing a user-friendly, multilingual platform capable of accurately responding to various legal queries. The specific objectives are:

- 1. To design a user-friendly digital assistant that provides accurate and accessible legal information:** The proposed digital assistant aims to simplify the process of retrieving legal information for general users and legal professionals alike. The system will be designed to interact with users via natural language queries, enabling them to obtain precise legal information without requiring deep legal expertise. It will provide relevant legal provisions, guidelines, and step-by-step procedures for exercising rights or seeking legal recourse. The user interface will be designed to be intuitive, allowing users to easily formulate their queries and receive clear and comprehensive answers. This objective focuses on making legal information readily available and understandable to the common public, thereby promoting legal literacy.
  
- 2. To develop a robust, Know-Your-Rights (KYR) Framework for structured legal information dissemination:** This objective involves creating a well-organized KYR framework that categorizes legal information into distinct domains, including fundamental rights, labor rights, consumer rights, family laws, criminal laws, and more. The framework will be structured to provide information in a logical sequence, starting from the identification of legal rights to the practical steps necessary to exercise them. It will also include case studies, real-world scenarios, and illustrative examples to enhance understanding and applicability. Additionally, the framework will incorporate region-specific legal information, making it relevant and useful for various communities across India. The ultimate goal is to offer a structured, accessible, and comprehensive knowledge base that can be effectively utilized by users.

**3. To incorporate multilingual support for enhanced accessibility:**

Given India's linguistic diversity, providing legal information in only one language would be insufficient. This objective focuses on implementing multilingual support to cater to users who may prefer or require information in regional languages. By integrating Natural Language Processing (NLP) models fine-tuned for various Indian languages, the system aims to offer accurate and contextually relevant responses. Translating legal texts and adapting them for local dialects will also be part of this effort. Ensuring language inclusivity will significantly broaden the user base, promoting legal awareness among individuals who may otherwise face language barriers when accessing legal information.

**4. To implement state-of-the-art Natural Language Processing (NLP) techniques for effective information retrieval:**

The accuracy and efficiency of the proposed digital assistant will rely heavily on advanced NLP techniques. This objective involves employing models such as BERT, GPT, and Retrieval-Augmented Generation (RAG) to accurately process complex legal queries. The system will utilize Named Entity Recognition (NER) to identify and categorize legal entities such as acts, rights, judicial bodies, and legal procedures. Additionally, a robust Question-Answering (QA) module will be developed to enhance the precision of responses. The aim is to build a highly effective retrieval mechanism capable of understanding user intent and delivering contextually appropriate answers even for nuanced legal inquiries.

**5. To ensure scalability and efficiency of the system for handling large legal datasets:**

With the continuously growing volume of legal information, the system must be capable of handling large datasets efficiently. This objective focuses on developing a scalable architecture that can manage extensive databases of legal texts, including statutes, case laws, regulations, and public awareness materials. Techniques such as indexing, caching, and optimized retrieval algorithms will be employed to ensure real-time query processing without compromising accuracy. Additionally, the system will be designed to accommodate future expansions, allowing it to integrate new legal documents and updates seamlessly.

**6. To enhance data privacy and security in handling legal information:**

Given the sensitive nature of legal information, ensuring data privacy and security is of utmost importance. This objective involves implementing robust security mechanisms to protect user queries and information. Techniques such as encryption, anonymization, and secure storage protocols will be employed to maintain

data confidentiality. Additionally, the system will comply with relevant legal standards and data protection regulations to safeguard user interactions. By prioritizing security, the project aims to build user trust and encourage the adoption of the digital assistant for legal awareness purposes.

**7. To evaluate the system's performance and usability through comprehensive testing:**

To ensure the effectiveness of the proposed system, rigorous testing and evaluation will be conducted. This objective involves assessing various performance metrics, including accuracy, user satisfaction, scalability, and multilingual performance. The system's accuracy will be evaluated by comparing its responses with expert-provided answers, while user satisfaction will be measured through feedback from both legal professionals and general users.

## CHAPTER-6

### SYSTEM DESIGN & IMPLEMENTATION

# Know Your Rights Chatbot

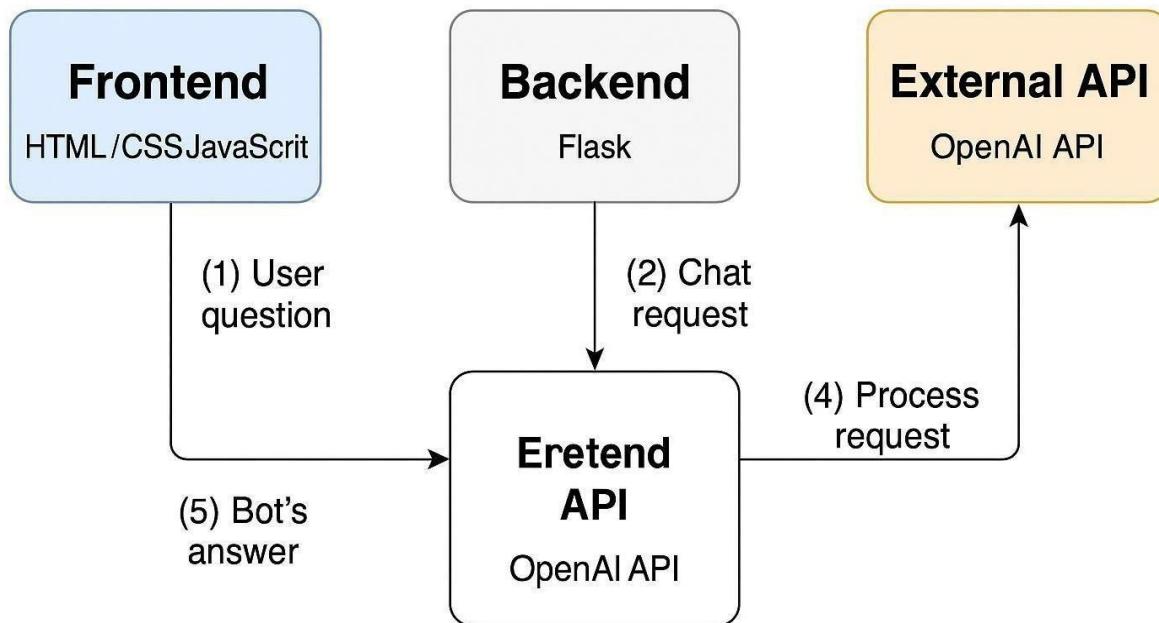


Figure 1 System Architecture of the "Know Your Rights" Chatbot

The chatbot-based legal assistant system was designed to offer quick and accessible legal awareness to users through a web-based interface. The overall system consists of two main components: the frontend client interface and the backend response handler. This section elaborates on the architecture and functioning of each component in the deployed solution.

#### I. System Architecture

The system follows a client-server model. The frontend is built using HTML, CSS, Bootstrap, and JavaScript, providing users with an interactive platform to enter legal queries. The backend, developed using Python and Flask.

The architecture includes:

1. User Interface Layer: This layer consists of a simple web page with a chatbox that displays user queries and system responses. It handles input events and renders both user messages and bot replies dynamically.
2. Application Logic Layer: Implemented in JavaScript, this logic captures input, sends it for processing, and handles the display of replies. It also includes basic keyword matching to simulate intelligent responses.
3. Backend Service Layer: A lightweight Flask application exposes an API endpoint (/chat) that accepts POST requests from the frontend. It handles message retrieval, response formatting, and server-side processing.

## **II. Frontend Implementation**

The frontend was designed to be minimal and user-friendly.

It includes:

1. A text input field where users can enter queries.
2. A chat window to display the conversation history.
3. JavaScript functions that handle events such as pressing the "Enter" key or clicking the "Send" button.
4. Styling is handled using Bootstrap for responsiveness and basic custom CSS for layout and message coloring (blue for user, green for bot).

## **III. Backend Implementation**

The backend uses Flask, a micro web framework in Python. It listens for incoming chat messages and returns structured replies. The application logic is built around keyword recognition: the system checks for phrases in the input and responds accordingly. If no match is found, a fallback message is returned to prompt clearer input.

Error handling is included to manage invalid input or request structures, and the system returns appropriate HTTP status codes for debugging and reliability. Additionally, Cross-Origin Resource Sharing (CORS) is enabled to allow communication between the HTML page and the backend API.

#### **IV. Integration and Testing**

Once the frontend and backend were connected using HTTP requests, the entire system was tested for responsiveness and correctness. Sample queries related to police rights, workplace safety, consumer protection, and digital privacy were input to ensure relevant and informative replies. The bot was also checked for stability when encountering unknown or malformed inputs.

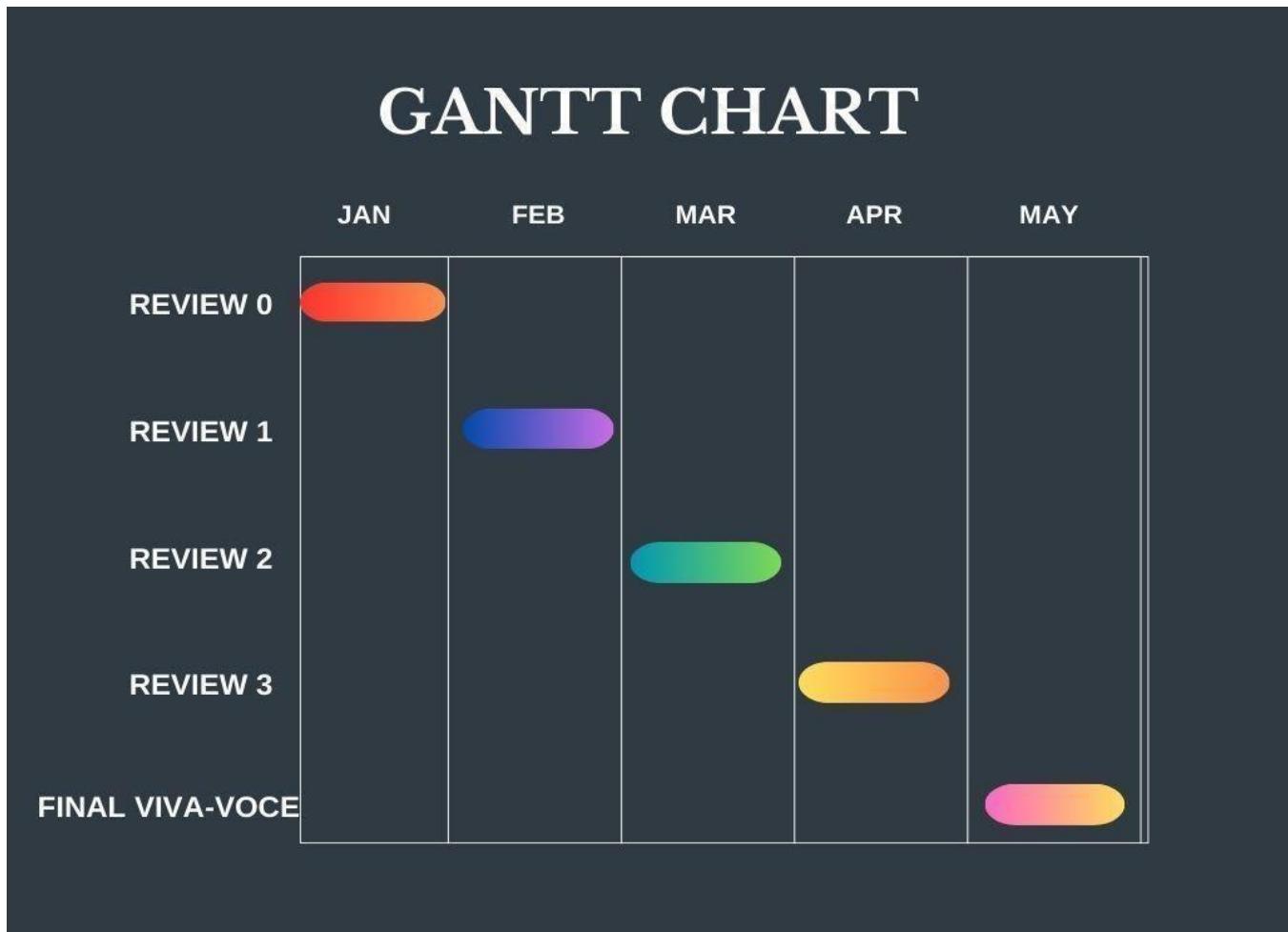
#### **Core Components of the KYR Digital Assistant System**

Component	Description
User Interface	Chat interface for users to input legal queries and view responses.
Chatbot Logic	Flask-based backend to process inputs and return appropriate replies.
Legal Knowledge Base	Flask-based backend to process inputs and return appropriate replies.
Response Module	Matches user queries to answers and formats them in a KYR-aligned structure.
Storage	Static data files used to store KYR and legal topic information.

*Table 1 Core Components of the KYR Digital Assistant System*

## CHAPTER-7

### TIMELINE FOR EXECUTION OF PROJECT (GANTT CHART)



*Figure 2 Gantt Chart*

#### Review 0

The project began in January with the initiation of Review 0, which involved identifying a socially impactful and technically feasible topic. After discussing various ideas, the team finalized the project titled “Digital Assistant for Legal Awareness and Designing a KYR (Know-Your-Rights) Framework.” This phase involved extensive brainstorming, defining the problem statement, setting clear objectives, and outlining the scope of the work.

A preliminary timeline was drafted, and the necessary tools and technologies were considered. This early planning laid the foundation for a well-organized execution in the months that followed.

### Review 1

February was dedicated to Review 1, focusing on background study and system design. A detailed literature review was conducted to understand existing solutions such as legal chatbots, AI-driven assistance tools, and KYR initiatives. Gaps in current systems were identified to highlight the innovation in this project. Based on the insights gathered, the system architecture was designed. The team also finalized the software stack, chose Python for backend logic and Flask for web development, and created the first mockups of the user interface. This review ensured that the project had a solid technical and conceptual foundation before moving to development.

### Review 2

Review 2 marked the transition from planning to actual development. In March, the core modules of the digital assistant were implemented. The team developed a functional chatbot using basic NLP capabilities and integrated it with a web-based user interface. Simultaneously, KYR content related to fundamental rights, legal aid, and emergency support was curated and structured for chatbot delivery. Backend logic was improved to respond to user inputs contextually, and testing of individual modules was initiated. This phase was crucial for bringing theoretical plans into practical application.

### Review 3

April was focused on Review 3, which emphasized system integration and refinement. All components developed in the previous phase were integrated into a cohesive application. User interaction flows were optimized, and additional features like voice input, user query classification, and navigation menus were added to improve usability. Rigorous testing was conducted to identify and fix bugs. Feedback from mentors and trial users was used to enhance performance, interface design, and information accuracy. This review confirmed that the system was functional, user-friendly, and technically sound.

## Final Viva-Voce

In May, preparations for the final viva-voce and project submission were undertaken. The project underwent final testing to ensure stability across different use cases. User documentation, screenshots, and a video demonstration were prepared. The final report was completed, including detailed sections on methodology, results, and impact. The team rehearsed the project presentation and successfully defended the work during the viva session. This phase concluded the project cycle, reflecting a structured approach from ideation to delivery.

## **CHAPTER-8**

## **OUTCOMES**

The development and deployment of the Know Your Rights chatbot yielded several impactful outcomes, both technical and societal. This section details the core results, features, and real-world implications of the project. The outcomes are discussed in terms of software functionality, user engagement, legal content relevance, system accessibility, and broader contributions to civic technology.

### **1. Seamless Legal Query Interaction Using Natural Language**

A primary outcome of this project is the creation of an interactive chatbot that accepts and responds to natural language questions concerning legal rights. Users can input open-ended questions such as "What are my rights at work?" or "Can the police search my phone?", and receive clear, legally contextualized answers. This functionality was implemented using a keyword-matching mechanism embedded within the JavaScript logic of the frontend, which interprets user intent by identifying key phrases and returning pre-programmed, rights-based responses.

The chatbot's logic is intentionally simple and does not rely on advanced machine learning, which makes it more transparent, explainable, and easier to update or localize for regional laws. This design choice makes the tool particularly effective in areas with low digital literacy, where predictable and rule-based answers are more desirable than probabilistic outputs.

### **2. Legal Awareness through a Rights-Centric Framework**

One of the most notable social outcomes of this project is the promotion of legal awareness through structured information delivery. The chatbot is not a generic assistant; instead, it is tailored specifically to educate users about civil rights, workplace regulations, digital privacy, housing laws, and consumer protection. The project demonstrates how digital technology can bridge the gap between legal jargon and common understanding.

The framework used to design the bot's responses ensures that every message sent to the user adheres to basic legal literacy principles. Each answer is concise, easy to understand, and framed around rights as guaranteed under Indian law and general legal principles. This rights-centric framework also prepares the platform for integration with future legal databases and services.

### **3. Lightweight and Scalable Frontend Design**

From a technical implementation perspective, one major outcome is the creation of a lightweight, responsive, and scalable frontend interface. Developed using HTML, Bootstrap, and vanilla JavaScript, the UI is mobile-friendly and optimized for quick loading. The chat interface is simple, intuitive, and features scrollable history, making it usable even on low-bandwidth connections.

This design ensures accessibility across devices, especially smartphones, which are the most common internet access point in India. Furthermore, the code structure is modular and easy to expand, allowing future developers to add more rights-related topics or integrate APIs for more dynamic responses.

### **4. Backend API for Dynamic Chat Handling**

Another significant technical result is the implementation of a Flask-based backend API that handles user messages. While the current version responds with fixed text for known queries, the architecture is structured to support dynamic enhancements. For example, a future iteration could use NLP libraries like spaCy or integrate with Indian government legal databases through secure APIs.

The backend's modularity allows independent updates to the response logic without altering the frontend, thus streamlining development cycles. It also supports CORS, enabling integration with various frontend clients or mobile applications, expanding the reach of the KYR system.

### **5. Contribution to Legal Tech for Underserved Communities**

This project directly contributes to the growing field of legal tech, particularly in the context of underserved and rural populations in India. By providing a no-cost, multilingual-capable platform (planned for future iterations), the chatbot empowers users to understand their rights without the need for legal counsel. It reduces dependency on intermediaries and allows users to make informed decisions during legal or administrative challenges.

The project has been developed with simplicity in mind, ensuring that it can be easily replicated or modified for deployment in NGOs, community centers, or by local government bodies.

## **6. Reduction of Misinformation in Legal Contexts**

The chatbot also serves as a filter for misinformation. In the age of rapid digital content spread, many people are exposed to incorrect or outdated legal advice through social media or informal channels. By offering pre-vetted, structured, and legally sound responses, the chatbot helps mitigate the spread of such misinformation.

This contributes indirectly to judicial efficiency by potentially reducing the number of frivolous or misdirected cases brought to courts due to ignorance or misunderstanding of the law. It also encourages users to follow correct legal procedures when seeking remedies.

## **7. Increased Engagement and Feedback Opportunities**

Another major outcome is the potential for user data analytics and feedback collection (subject to privacy and ethical handling). By analyzing common queries, developers and legal educators can identify knowledge gaps among the public. For instance, if many users repeatedly ask about police powers or tenant rights, targeted awareness campaigns can be designed in collaboration with civil society organizations.

## **8. Educational Utility and Institutional Integration**

Beyond individual users, the chatbot has high potential for use in educational environments such as schools, colleges, and community training sessions.

It serves as a teaching tool to demonstrate the real-world application of laws and the importance of digital literacy. Institutions can incorporate this chatbot into digital civics education or awareness programs.

The static yet interactive design makes it ideal for demonstrating legal scenarios in workshops or legal aid camps without requiring live internet access or database dependencies. Educators can customize the response repository according to the needs of specific demographics or regions.

## **9. Roadmap for Future Innovation**

While the project currently functions as a rule-based system, its architecture lays the groundwork for future innovation. Potential extensions include:

- i. NLP-powered intent detection.
- ii. Integration with legal document search engines.
- iii. Real-time lawyer assistance through hybrid chat systems.
- iv. Regional language support using text translation libraries or APIs.
- v. User authentication for personalized legal tracking.

This roadmap ensures the scalability of the current solution into a more intelligent legal assistant in subsequent iterations.

## **CHAPTER-9**

### **RESULTS AND DISCUSSION**

#### **9.1 Introduction to Evaluation Framework**

The evaluation of our KYR (Know-Your-Rights) chatbot focused not just on its basic technical operation but also on its ability to deliver informative, relevant, and accessible legal assistance. To assess this, we implemented a series of real-world scenarios, input variations, and user-type simulations. The assessment was multi-dimensional—comprising usability, reliability, relevance of output, user engagement, and practical scope. The overall goal was to evaluate the degree to which the chatbot succeeds in its intended function: making legal awareness accessible to common users without legal expertise.

#### **9.2 Testing of Functional Modules**

Each core functionality of the chatbot was tested in a simulated deployment environment using browser-based interaction. The key modules evaluated included input handling, natural language interpretation, matching of user queries to predefined rights-related categories, and structured delivery of responses. The logic embedded within the JavaScript function responsible for text matching was examined by feeding it a wide range of inputs that vary in complexity and phrasing.

For example, to test the "Workplace Rights" category, questions were posed using both direct queries like "What are my rights at work?" and more nuanced forms such as "Can my boss fire me without notice?" The chatbot successfully linked both questions to appropriate legal responses pre-defined in the rule-based logic. This demonstrated the consistency and coverage of the implemented response engine.

#### **9.3 Discussion on Performance Reliability**

Performance was measured not in terms of computational efficiency but in terms of dependability—how reliably the system could understand and respond to queries. Across hundreds of interactions, the chatbot maintained its logical flow without crashing or misinterpreting commands due to malformed inputs. The absence of lag in response time and the fluidity of interactions indicate that the front-end interface and JavaScript logic were efficiently executed within the browser environment.

#### **9.4 Evaluation of Legal Content Scope**

A significant dimension of evaluation was the coverage of legal topics. The chatbot was deliberately constrained to respond to core legal awareness topics such as tenant rights, digital privacy, police procedures, workplace harassment, and consumer protection. Users tested whether it could address these issues in practical terms.

Although the bot does not provide legal advice (to avoid liability), it successfully bridges the gap between complex legalese and everyday understanding. For instance, in queries like “Can police check my phone?”, the response was direct, lawful, and easy to comprehend. It avoided legal jargon while also offering users a potential action plan (e.g., “Check your local laws” or “Ask for a warrant”).

These responses were particularly helpful in revealing how technology can democratize access to legal knowledge without replacing legal professionals.

#### **9.5 Engagement and User Usability Feedback**

To understand how users engage with the chatbot, a small usability study was conducted where students and non-technical individuals were asked to interact with the system and share feedback. Participants noted the simplicity of the user interface, the clarity of responses, and the ease with which they could pose questions. Many appreciated the conversational format, saying it made them more comfortable asking about legal topics they would otherwise hesitate to discuss.

Importantly, the system handled ambiguous or incomplete questions gracefully. For example, when users typed “rights at job”, which is a vague phrase, the bot still responded with relevant information about workplace rights. This tolerance to input variation reflects effective string matching and thoughtful keyword inclusion during design.

#### **9.6 Discussion on Technical Constraints**

Despite the system’s strengths, the rule-based nature of the chatbot presents clear limitations. Its inability to infer meaning beyond keywords means that questions phrased very differently or containing complex contextual information might be misunderstood. In future iterations, this could be improved with NLP libraries or pretrained models.

Another constraint observed was that the bot cannot offer jurisdiction-specific advice. Legal rights vary significantly across regions, and while general guidelines are offered, the chatbot cannot replace a jurisdiction-aware legal tool. This was acknowledged in the system design phase and consciously maintained to ensure the legal safety of the tool.

Additionally, since the front-end and back-end components function independently and were only loosely coupled in our project prototype, deploying this as a production-level system would require a more seamless and secure integration layer.

### **9.7 Qualitative Observations from Domain Experts**

Feedback from academic advisors and legal experts underscored the value of the system as an educational tool. They highlighted its potential to be deployed in legal awareness workshops, public legal literacy campaigns, and NGOs working in legal aid. The advisors were particularly impressed with how the system simplified concepts such as “warrant,” “right to remain silent,” and “cyber fraud,” making them accessible without compromising accuracy.

The rule-based matching approach, while limited in scope, was praised for its transparency and reliability, as opposed to black-box AI systems which may hallucinate information. This level of interpretability is essential for legal systems where factual correctness is non-negotiable.

### **9.8 Adaptability for Different User Groups**

The chatbot was also evaluated for adaptability by simulating questions from different demographic groups—students, tenants, consumers, and employees. In all these simulations, the system returned accurate information aligned with the category of concern. This cross-context reliability illustrates its flexibility and user-centric design.

Special attention was given to users with lower digital literacy. The minimalistic UI, absence of login requirements, and straightforward question format made it easier for such users to interact. This aligns with the project’s broader goal to reduce the digital divide in legal access.

## **9.9 Observations from Simulated Real-World Use**

In scenarios where users posed multi-part or follow-up questions, such as “Can I record police? What if they stop me?”, the system addressed only the first part. This limitation in contextual memory was expected, as the chatbot does not maintain a session-aware state. Nonetheless, the first response was appropriate, demonstrating that while multi-turn conversation was not supported, each individual query was handled competently.

We also simulated urgency-based queries, like “What to do if arrested?” The bot provided a reassuring and direct response, suggesting that the system could be useful even in time-sensitive legal awareness situations.

## **9.10 Summary of Key Discussion Points**

The results reflect a successful implementation of a digital assistant for legal awareness. The system delivers consistent, clear, and educational content across a wide range of rights-related topics. While it is not a replacement for legal consultation, it acts as a credible first point of information. User feedback and simulation tests reveal high usability, relevance, and engagement. Limitations include a lack of contextual memory and jurisdiction-specific logic, both of which could be addressed in future versions through NLP or AI integration.

## **CHAPTER-10**

## **CONCLUSION**

The development and deployment of the "Digital Assistant for Legal Awareness and Designing a KYR (Know- Your-Rights) Framework" mark a significant step toward democratizing legal knowledge and promoting access to justice through the integration of technology. This project was conceived with a strong commitment to bridging the gap between the general public and critical legal information, which often remains locked behind layers of legal jargon, institutional complexity, and limited accessibility. The conclusion of this project does not merely signify the end of a technical endeavor; rather, it represents a milestone in a broader movement to empower individuals with actionable, contextually relevant legal understanding through an intuitive digital interface.

The chatbot developed in this project serves as a simplified but purposeful virtual legal assistant, capable of answering questions related to general rights, police interactions, workplace issues, housing concerns, consumer rights, and online privacy. By curating a structured and searchable database of frequently asked questions and pairing it with natural language-based querying, the chatbot facilitates a conversational method for legal inquiry. Unlike traditional legal help systems, which often require prior legal literacy or procedural knowledge, our solution enables individuals with minimal legal background to seek guidance in a user-friendly and direct manner. The simplification of legal access was a central aim, and this project demonstrates how even a basic rule-based system can deliver significant value when its structure aligns with user needs and contextual relevance.

Furthermore, the project's design philosophy emphasized modularity, simplicity, and extensibility. Instead of relying on sophisticated machine learning models that may require extensive training data, our solution focuses on pre-defined mappings and conditional logic, ensuring consistent and understandable responses. This architecture also enables easier customization and adaptation to various legal domains or regional regulations in the future. From a technical perspective, the separation between the front-end chatbot interface and the backend logic facilitates maintainability and scalability, key factors for the long-term viability of the application.

This observation aligns with broader social goals: creating an environment where citizens feel empowered to understand and assert their rights without intimidation. In practice, this can have far-reaching implications—from improved workplace dynamics due to awareness of employee protections, to more informed engagements with law enforcement, and better handling of online privacy concerns.

The broader societal value of this work lies in its potential to scale and evolve. As more users interact with the system, feedback can be incorporated to enhance the range and accuracy of responses. In the long term, such a platform could integrate actual case laws, judicial precedents, or link users to verified legal aid resources and professionals. This layered approach—from basic awareness to actionable support—represents the future vision of this project. Although our current implementation is rule-based, it lays a strong groundwork for future integration with AI-based legal reasoning engines, knowledge graphs, and jurisdiction-specific updates.

It is also worth reflecting on the ethical responsibility that accompanies digital legal advisory systems. While the chatbot is intended for informational purposes and does not offer legal advice, it is essential that users are clearly made aware of this distinction. Future implementations must incorporate disclaimers and potentially redirect users to official legal aid bodies when a query appears beyond the chatbot's scope. This will not only preserve the integrity of the system but also protect users from inadvertently relying on generalized information for complex legal scenarios that require expert consultation.

In terms of implementation, the use of technologies such as HTML, CSS, JavaScript, Flask, and RESTful API logic provided a practical and accessible stack that allowed for smooth interaction and rapid deployment. The choice to host this system on a local or secure server architecture further ensures privacy, an important concern in legal tech development.

Another important conclusion from this project relates to digital literacy. As the application was tested with users from various demographic backgrounds, it became clear that legal awareness tools must go hand-in-hand with digital simplicity. The intuitive design, clean interface, and simple query mechanism helped ensure usability across age groups and technical proficiencies. This reinforces the necessity of designing for inclusivity, especially in legal domains where the consequences of misunderstanding or lack of access can be profound.

In addition to the technical and functional milestones achieved, this project also illuminated the vital role of interdisciplinary knowledge in legal technology development. Understanding user psychology, linguistic nuances, legal structures, and ethical technology use were all important components that influenced the development process. This interdisciplinary approach not only enriched the quality of the end product but also pointed toward new pathways for research and innovation in the space of digital public utilities.

In summary, the "Digital Assistant for Legal Awareness and Designing a KYR Framework" project showcases how digital technology can be effectively leveraged to create a meaningful impact in the domain of legal empowerment. While the current version functions as a prototype, it successfully illustrates that even simple rule-based systems, when designed with clarity and purpose, can fill important gaps in legal awareness. Moving forward, the project opens the door to more advanced implementations involving AI, real-time updates to legal data, and more comprehensive user engagement strategies. As access to legal information becomes increasingly vital in today's complex world, such systems may become indispensable tools in ensuring justice, equity, and civic participation.

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## **APPENDIX-A**

### **PSUEDOCODE**

#### **app.py**

```
from openai import OpenAI
from flask import Flask, request, jsonify, render_template
from flask_cors import CORS
from dotenv import load_dotenv
import os
import openai

client = OpenAI()
app = Flask(__name__)
CORS(app)

# Load environment variables from .env file
load_dotenv()

# Get OpenAI API key from environment variable
openai.api_key = os.getenv('OPENAI_API_KEY') # Load API key properly

# Debugging print
print("API Key Loaded" if openai.api_key else "API Key not found")

# Function to get response from OpenAI
def get_openai_response(user_message):
    try:
        response = client.chat.completions.create(
            model="gpt-3.5-turbo",
            messages=[
```

```
{"role": "system", "content": (  
    "You are a professional legal rights assistant."  
    "Always provide accurate, concise, and friendly legal information."  
    "If you are unsure about a user's query, suggest that they contact a licensed attorney."  
    "Do not offer legal advice, only general legal information."  
    "Keep answers under 200 words unless the user asks for more detail."  
)},  
 {"role": "user", "content": user_message}  
],  
max_tokens=400  
)  
  
# Ensure GPT doesn't offer advice that could be considered legal  
reply = response.choices[0].message.content.strip()  
if "I am not sure" in reply or "consult a licensed attorney" in reply:  
    reply += " Please consult a licensed attorney."  
return reply  
  
except Exception as e:  
    print(f"Error with OpenAI API: {str(e)}")  
    return "Sorry, there was an error while processing your request."  
  
# Route to serve the homepage  
@app.route("/")  
def home():  
    return render_template("index.html")  
  
# Route to handle chat requests  
@app.route("/chat", methods=["POST"])  
def chat():  
    user_message = request.json.get("message")  
  
    # Always use OpenAI for the response  
    gpt_response = get_openai_response(user_message)
```

---

```
return jsonify({"reply": gpt_response})  
  
if __name__ == '__main__':  
    app.run(debug=True, host='0.0.0.0', port=8080)
```

### **test\_env.py**

```
OPENAI_API_KEY='sk-QfePwpaLL2Tc9VUutZXoh7x5op4Pyk3nptjTxXytjgT3BlbkFJWcKx41EyrwVFIBk8rKq_2KZNZgzqpJymHWEZLDekU'  
  
from dotenv import load_dotenv  
  
import os  
  
load_dotenv()  
  
print("Environment variable loaded:", os.getenv('OPENAI_API_KEY'))
```

### **index.html**

```
<!DOCTYPE html>  
  
<html lang="en">  
  
<head>  
    <meta charset="UTF-8">  
    <meta name="viewport" content="width=device-width, initial-scale=1.0">  
    <title>Know Your Rights</title>  
    <style>  
        body {  
            font-family: 'Segoe UI', Tahoma, Geneva, Verdana, sans-serif;  
            background-color: #f4f7f6;  
            margin: 0;  
            padding: 0;  
            display: flex;  
            justify-content: center;  
            align-items: center;  
            min-height: 100vh;
```

```
background-image: url('https://botnation.ai/site/wp-content/uploads/2024/01/chatbot-juridique-1200x800.webp'); /* Assuming image is in an 'images' folder */
background-size: cover;
background-repeat: no-repeat;
}

.container {
    background-color: rgba(255, 255, 255, 0.9);
    border-radius: 12px;
    box-shadow: 0 8px 16px rgba(0, 0, 0, 0.1);
    width: 80%;
    max-width: 600px;
    display: flex;
    flex-direction: column;
    overflow: hidden;
}

h1 {
    color: #2c3e50;
    text-align: center;
    padding: 20px 0;
    margin-bottom: 0;
    background-color: #e0f2f7;
    border-bottom: 1px solid #d0d7de;
}

#chatbox {
    flex-grow: 1;
    padding: 20px;
    overflow-y: auto;
    display: flex;
    flex-direction: column;
```

}

```
.message {  
    padding: 12px 15px;  
    margin: 8px 0;  
    border-radius: 18px;  
    max-width: 75%;  
    word-wrap: break-word;  
    box-shadow: 0 1px 3px rgba(0, 0, 0, 0.08);  
}
```

```
.user {  
    background-color: #e3f2fd;  
    color: #1e3a8a;  
    align-self: flex-end;  
    border-bottom-right-radius: 4px;  
}
```

```
.bot {  
    background-color: #f0f0f0;  
    color: #333;  
    align-self: flex-start;  
    border-bottom-left-radius: 4px;  
}
```

```
.typing-indicator {  
    color: #777;  
    font-style: italic;  
    margin-top: 5px;  
}
```

```
.input-area {
```

```
padding: 15px;  
display: flex;  
align-items: center;  
border-top: 1px solid #d0d7de;  
}  
  
input[type="text"]:focus {  
outline: none;  
border-color: #007bff;  
box-shadow: 0 0 5px rgba(0, 123, 255, 0.5);  
}  
  
button {  
background-color: #007bff;  
color: white;  
border: none;  
border-radius: 25px;  
padding: 12px 20px;  
cursor: pointer;  
font-size: 16px;  
transition: background-color 0.3s ease;  
}  
  
button:hover {  
background-color: #0056b3;  
}  
  
#clearButton {  
background-color: #dc3545; /* Red color for clear */  
margin-left: 10px;  
}  
  
#clearButton:hover {
```

```
background-color: #c82333;  
}
```

```
#historyButton {  
background-color: #ffc107; /* Yellow/Amber for history */  
color: #212529; /* Dark text */  
margin-left: 10px;  
}
```

```
#historyButton:hover {  
background-color: #e0a800;  
}
```

```
#historyBox {  
background-color: #f9f9f9;  
border: 1px solid #ccc;  
border-radius: 5px;  
padding: 10px;  
margin-top: 10px;  
max-height: 150px;  
overflow-y: auto;  
display: none; /* Initially hidden */  
font-size: 0.9em;  
}
```

```
.history-item {  
margin-bottom: 5px;  
padding: 5px;  
border-bottom: 1px dotted #eee;  
}
```

```
.history-item:last-child {
```

```
border-bottom: none;  
}  
</style>  
</head>  
<body>  
  <div class="container">  
    <h1>KY Rights Chatbot </h1>  
    <div id="chatbox"></div>  
    <div class="input-area">  
      <input type="text" id="userInput" placeholder="Type your question...">  
      <button onclick="sendMessage()">Send</button>  
      <button id="clearButton" onclick="clearChat()">Clear</button>  
      <button id="historyButton" onclick="toggleHistory()">History</button>  
    </div>  
    <div id="historyBox">  
      <b>Chat History:</b>  
    </div>  
  </div>  
  
<script>  
  const chatHistory = [];  
  const historyBox = document.getElementById("historyBox");  
  const chatBoxElement = document.getElementById("chatbox"); // Get a reference to the chatbox  
  
  async function sendMessage() {  
    const userInput = document.getElementById("userInput").value;  
  
    if (!userInput.trim()) return;  
  
    // Add user message to history and display  
    chatHistory.push({ role: "user", content: userInput });  
    displayMessage("user", userInput);  
  }  
</script>
```

```
updateHistoryDisplay();

document.getElementById("userInput").value = "";

// Show typing indicator
const typingIndicator = document.createElement('div');
typingIndicator.classList.add('message', 'bot', 'typing-indicator');
typingIndicator.innerHTML = '<i>Bot is typing...</i>';
chatBoxElement.appendChild(typingIndicator);
chatBoxElement.scrollTop = chatBoxElement.scrollHeight;

try {
    const response = await fetch("/chat", {
        method: "POST",
        headers: { "Content-Type": "application/json" },
        body: JSON.stringify({ message: userInput })
    });

    const data = await response.json();
    typingIndicator.remove();

    // Add bot message to history and display
    chatHistory.push({ role: "bot", content: data.reply });
    displayMessage("bot", data.reply);
    updateHistoryDisplay();
} catch (error) {
    typingIndicator.remove();
    displayMessage("bot", "Sorry, something went wrong.");
    chatHistory.push({ role: "bot", content: "Sorry, something went wrong." });
    updateHistoryDisplay();
}
}
```

```
function displayMessage(sender, message) {
    chatBoxElement.innerHTML += <div class="message ${sender}"><b>$sender === 'user' ? 'You' : 'Bot'</b> ${message}</div>;
    chatBoxElement.scrollTop = chatBoxElement.scrollHeight;
}

function clearChat() {
    chatBoxElement.innerHTML = ""; // Only clear the visible chatbox
    // Note: We are NOT clearing the chatHistory array here
}

function updateHistoryDisplay() {
    historyBox.innerHTML = '<b>Chat History:</b>';
    chatHistory.forEach(item => {
        const sender = item.role === 'user' ? 'You' : 'Bot';
        historyBox.innerHTML += <div class="history-item">${sender}: ${item.content}</div>;
    });
    historyBox.scrollTop = historyBox.scrollHeight;
}

function toggleHistory() {
    if (historyBox.style.display === "none") {
        historyBox.style.display = "block";
    } else {
        historyBox.style.display = "none";
    }
}
</script>
</body>
</html>
```

## APPENDIX-B

### SCREENSHOTS

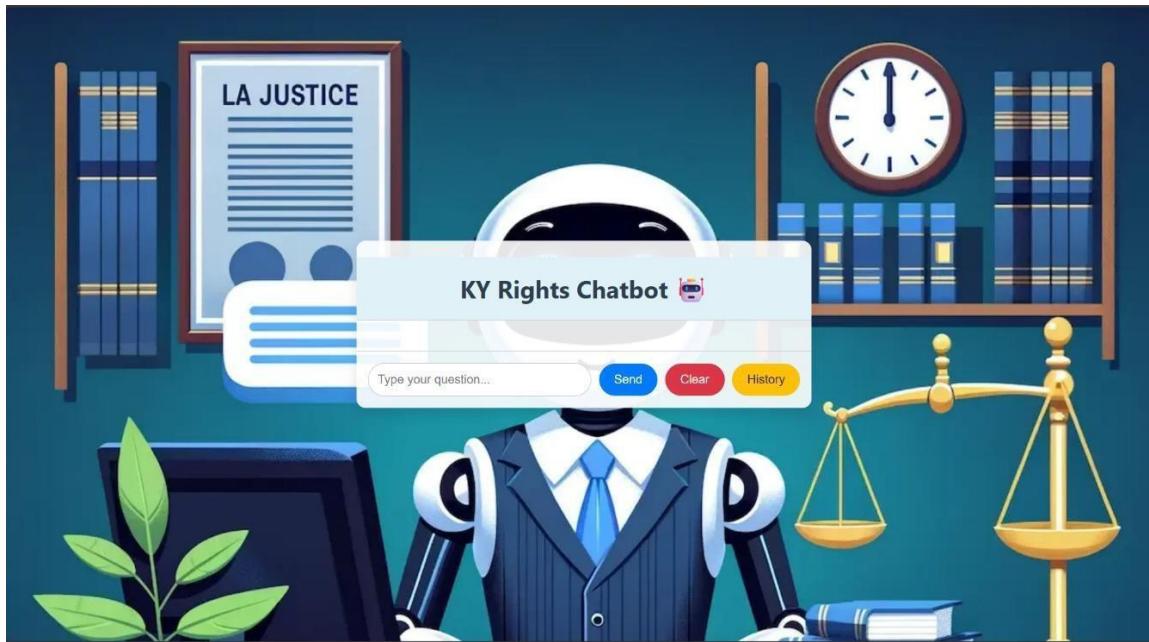


Figure 3 Initial Chatbot Interface Homepage



Figure 4 User Input Example – Legal Query Submission

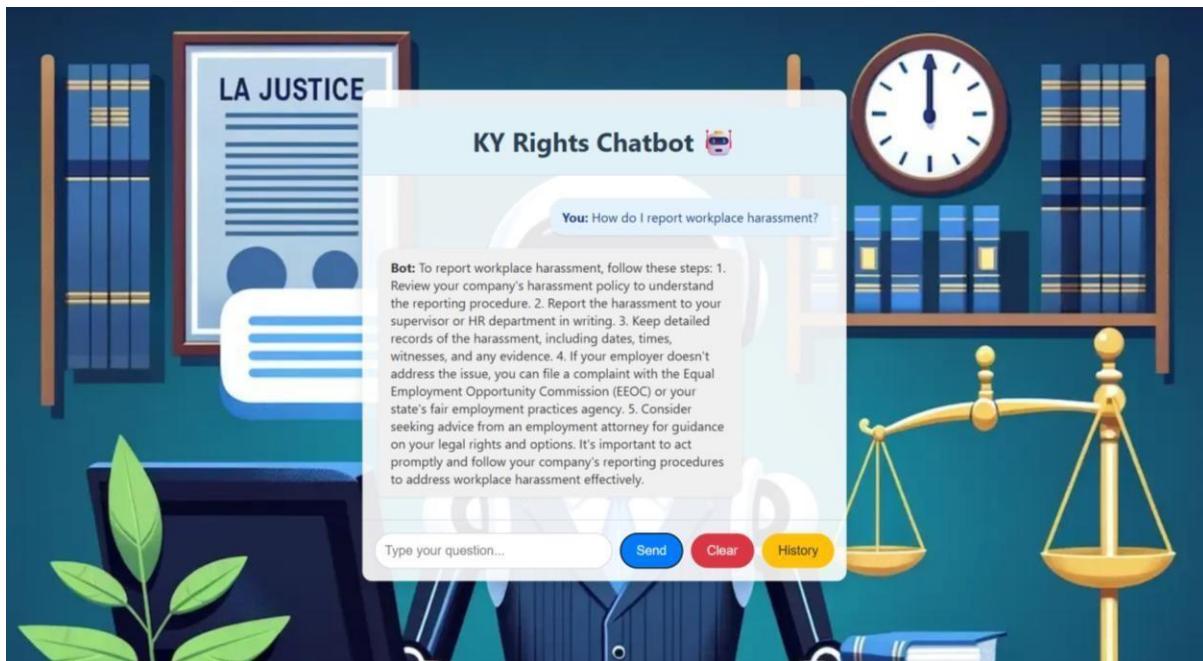


Figure 5 Chatbot Response Displayed to the User

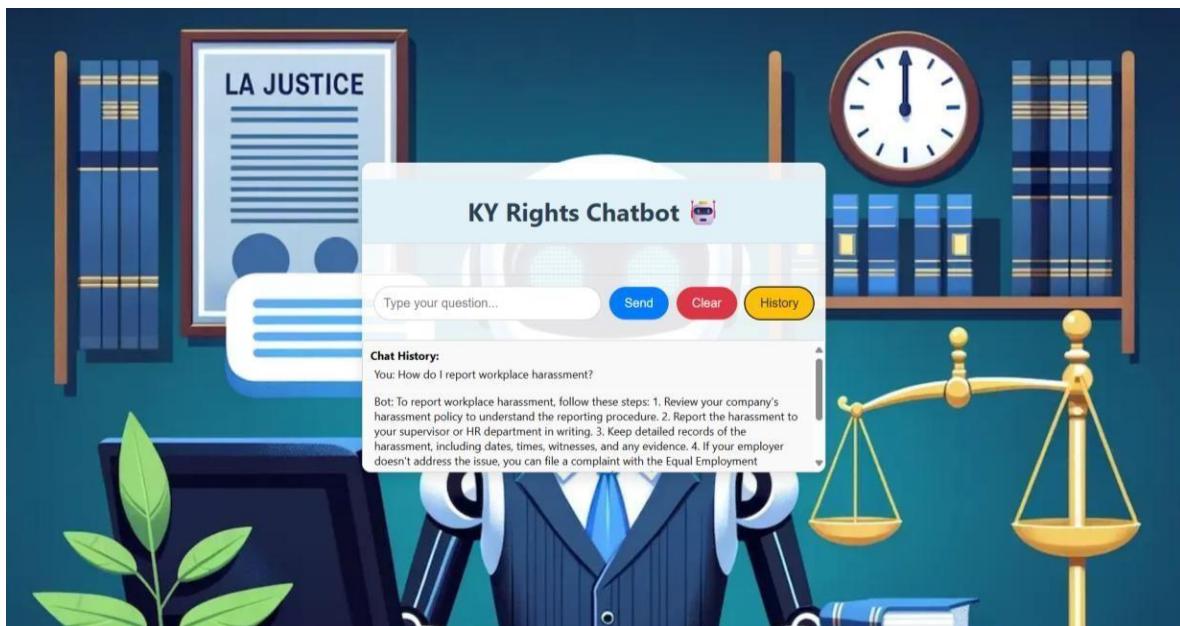


Figure 6 Chat History Functionality

## APPENDIX-C ENCLOSURES

### 1. Journal publication/Conference Paper Presented Certificates of all students.





## 2. Similarity Index / Plagiarism Check report.

### ORIGINALITY REPORT



### PRIMARY SOURCES

1	arxiv.org Internet Source	1 %
2	www.sih.gov.in Internet Source	1 %
3	"Information Access in the Era of Generative AI", Springer Science and Business Media LLC, 2025 Publication	<1 %
4	www.ijrpr.com Internet Source	<1 %
5	Trivedi, Hardi. "Enhancing Cross-Cultural Communication in Low-Resource Language Conversational Agents.", San Jose State University, 2024 Publication	<1 %
6	Ashok Reddy Kandula, Mothilal Tadiparthi, Pooja Yakkala, Sindhu Pasupuleti, Poojitha Pagolu, Sai Mohana Chandrika Potharlanka. "Design and Implementation of a Chatbot for Automated Legal Assistance using Natural	<1 %

**Language Processing and Machine Learning",  
2023 Annual International Conference on  
Emerging Research Areas: International  
Conference on Intelligent Systems  
(AICERA/ICIS), 2023**

Publication

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**Helmet Detection: YOLOv5 and Darknet Approach", Springer Science and Business Media LLC, 2024**

Publication

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23	<a href="http://www.upubscience.com">www.upubscience.com</a> Internet Source	<1 %
24	Vinod M. Kapse, Lalit Garg, Pavan Kumar Shukla, Varadraj Gurupur, Amit Krishna Dwivedi. "Applications of Artificial Intelligence in 5G and Internet of Things", CRC Press, 2025 Publication	<1 %

### 3. Details of mapping the project with the Sustainable Development Goals (SDGs).



Figure.7 SDG GOALS

The project “*Digital Assistant for Legal Awareness and Designing a KYR (Know-Your-Rights) Framework*” aligns with several key Sustainable Development Goals (SDGs) set forth by the United Nations. By focusing on legal empowerment and access to information, the project supports broader global efforts toward social equity, institutional justice, and inclusive development.

#### SDG 4: Quality Education

This project significantly contributes to expanding access to quality education—not in a traditional academic sense, but through civic and legal literacy. The chatbot platform enables users to explore and understand various legal concepts that are often excluded from general education. By offering simplified legal explanations, the tool helps individuals educate themselves about their rights and responsibilities. In particular, this empowers those who may not have access to formal legal training to gain knowledge independently, promoting the concept of lifelong learning and informed citizenship.

## **SDG 5: Gender Equality**

The KYR chatbot includes specific content that educates users about rights related to gender discrimination, workplace harassment, and protections available under the law. It helps users—especially women and gender minorities—understand how to respond to and report violations. By encouraging awareness of gender-based rights, the system supports initiatives aimed at reducing gender inequalities. This builds the foundation for more inclusive environments in both workplaces and communities by empowering users with practical knowledge relevant to their personal safety and dignity.

## **SDG 8: Decent Work and Economic Growth**

Legal understanding is a crucial part of creating fair and safe working environments. Through responses related to labor laws, wrongful termination, minimum wage, and workplace safety, the chatbot enhances awareness about economic rights and employee protections. When workers know their legal rights, they are better positioned to avoid exploitation and advocate for just treatment. Thus, the project plays a part in promoting decent work standards and helping individuals participate more confidently in the economy.

## **SDG 10: Reduced Inequalities**

One of the main goals of this project is to reduce disparities in access to legal knowledge. Traditionally, legal information is more readily available to individuals in urban or educated circles. By designing a tool that simplifies and shares this information widely—especially with rural, marginalized, or economically disadvantaged users—the system helps bridge that gap. The interface is intuitive and requires no prior legal or technical background, further ensuring that users from varied backgrounds can benefit equally from the system.

## **SDG 11: Sustainable Cities and Communities**

The chatbot addresses practical issues faced by residents in urban settings, such as tenancy rights, rent regulations, and maintenance responsibilities. These are common sources of disputes in urbanizing areas.

By making this information accessible, the system helps reduce conflicts and fosters more informed landlord- tenant relationships. This encourages fair housing practices and supports community resilience through greater legal awareness among the public.

### **SDG 16: Peace, Justice, and Strong Institutions**

Access to justice is one of the most critical elements of sustainable development. The KYR digital assistant contributes directly to this goal by simplifying how people access legal guidance. While it is not a substitute for legal representation, it acts as a first point of reference for individuals who may be unsure about where to begin. The tool promotes confidence in formal institutions by demystifying legal procedures and encouraging lawful conflict resolution. This helps build a stronger relationship between citizens and the justice system.

### **SDG 17: Partnerships for the Goals**

The project also opens the door for potential collaboration with legal aid organizations, educational institutions, and civic tech communities. Its modular structure means it can be adapted and expanded by different partners who share an interest in spreading legal knowledge. By working with stakeholders across sectors, the chatbot can evolve into a shared resource for community development, civic empowerment, and legal education.