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Adhikar: AI-Powered Legal Aid Chatbot for India

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Abstract: *The development of “Aadhikar: an AI-powered legal aid chatbot for India”, emerges against the backdrop of a widespread legal literacy crisis, where a majority of the population remains unaware of their fundamental rights and unable to access justice due to linguistic, financial, geographical, and psychological barriers. In a country with profound diversity and disparity, the inaccessibility of legal knowledge perpetuates exploitation and disenfranchisement, particularly among rural, marginalized, and low-income communities. This project addresses these critical issues by creating an intelligent, multilingual, and user-centric platform designed to democratize legal information and serve as a first point of contact for legal guidance. By investigating the integration of advanced Natural Language Processing (NLP) and Generative AI models, Aadhikar enables users to ask legal questions in everyday language including Hindi and regional dialects and receive clear, simplified explanations rooted in verified legal sources such as the Indian Constitution, statutory laws, and landmark court judgments. The methodological approach combines backend development with Python Flask, frontend design with React.js, and a structured legal knowledge base to ensure accuracy, accessibility, and trust. Performance evaluations demonstrate that Aadhikar achieves 87% accuracy in legal query classification and 92% user satisfaction, effectively bridging the justice divide. The implications of this work are transformative: by making legal rights understandable and accessible regardless of a user’s location, economic status, or education, Aadhikar not only advances the Digital India initiative but also fosters social empowerment, enhances civic awareness, and contributes to a more just and equitable society.*

Keywords: LegalTech, AI Chatbot, Natural Language Processing, Legal Aid, Indian Laws, Multilingual Support, Access to Justice, Legal Literacy, Artificial Intelligence, Digital India.

I. INTRODUCTION

A. Overview

India stands as one of the world’s most vibrant and diverse democracies, marked by an intricate socio-legal landscape that reflects its multicultural, multilingual, and socio-economically varied population. Over the decades, the nation has built one of the most exhaustive legal frameworks in the world—rooted in constitutional values of justice, equality, and liberty. Yet, despite this robust architecture, India continues to grapple with a deep-rooted and persistent crisis of legal literacy and equitable access to justice. Numerous studies, including surveys conducted by the National Legal Services Authority (NALSA), indicate that nearly 70% of citizens remain unaware of even their basic legal rights, highlighting a troubling disconnect between legal protections guaranteed on paper and the lived realities of ordinary people.

This gap is far from uniform; it disproportionately affects those at the margins of society. Rural communities, women, children, migrant labourers, Scheduled Castes, Scheduled Tribes, and economically weaker groups face structural disadvantages that limit their ability to navigate the justice system. Social conditioning, lack of education, cultural barriers, fear of authority, and financial dependence further compound their vulnerability. As a result, legal protection intended as a universal entitlement—often becomes a privilege enjoyed by those with economic power, social influence, or legal awareness, while millions remain susceptible to exploitation, discrimination, and coercion.

In addition to socio-economic barriers, systemic inefficiencies further widen the chasm between citizens and justice. Chronic court backlogs, understaffed legal aid services, procedural complexities, bureaucratic delays, language differences, and geographical inaccessibility together create a perfect storm that denies timely justice to large sections of the population. Even where mechanisms such as free legal aid exist, awareness and utilization remain minimal. The result is a justice system that, while constitutionally sound, struggles to deliver on its democratic promise in practice.

At the same time, India is undergoing a profound digital transformation that is reshaping how citizens interact with services, institutions, and information. With over 750 million smartphone users and rapidly increasing broadband reach under public initiatives like BharatNet, India possesses the technological infrastructure necessary to enable large-scale digital service delivery.

This digital leap has created an unprecedented opportunity to re-imagine how legal awareness and access to justice can be expanded in an inclusive and citizen-centered manner. The emergence of artificial intelligence, especially conversational AI, offers new pathways for bridging knowledge divides, simplifying complex information, and making legal understanding accessible in multiple languages and formats.

It is precisely at this intersection of social urgency and technological capability that Aadhikari is conceived. Aadhikari is not envisioned merely as a chatbot but as a socio-technical intervention for legal empowerment. While global legal tech innovations have largely focused on enhancing the productivity of law firms, optimizing workflows, or serving corporate clients, India's unique realities call for a fundamentally different approach. With its 22 official languages, diverse cultural contexts, deeply embedded personal laws, and a massive justice-delivery gap, India needs solutions that are linguistically inclusive, culturally aware, and designed explicitly for public benefit.

Aadhikar aims to address this need by becoming a "digital nyayamitra" (justice friend) a 24x7, confidential, and cost-free resource that simplifies legal complexities for everyday citizens. Its core mission, reflected in its name derived from the Hindi word for "rights," is to transform constitutional ideals into actionable, understandable, and personalized legal knowledge. Whether a person seeks information about domestic violence laws, labor rights, property disputes, cybercrime, consumer protection, or government schemes, Aadhikar acts as a non-judgmental and accessible first point of guidance. Beyond just providing information, Aadhikar aspires to reduce fear, uncertainty, and misinformation by presenting legal concepts in clear, conversational language, bridging the gap between communities and the justice system. In doing so, it positions itself as a transformative digital tool that can empower millions especially those who traditionally remain outside the reach of the legal ecosystem. By democratizing access to legal knowledge and lowering the barriers to understanding one's rights, Aadhikar holds the potential to contribute meaningfully to a more just, aware, and equitable society.

II. PROBLEM STATEMENT

The inaccessibility of the Indian legal system is a multidimensional problem rooted in structural, economic, and psychological barriers, creating what can be termed a "justice desert" for the common citizen.

1) Lack of Awareness (The Knowledge Deficit)

The foundation of the problem is a widespread ignorance of rights. Most citizens are unaware of the protections enshrined in Part III (Fundamental Rights) and Part IV (Directive Principles) of the Constitution, let alone specific statutes like the Consumer Protection Act (2019), the Right to Information Act (2005), or the Protection of Women from Domestic Violence Act (2005).

This ignorance spans critical life domains: unaware tenants face unlawful eviction, consumers accept defective goods, employees tolerate unsafe working conditions, and women endure harassment without knowing legal remedies. This lack of awareness is the first and most critical barrier, rendering all other legal safeguards ineffective.

2) Language and Literacy Barriers (The Linguistic Divide)

The language of the law is English-centric and jargon-heavy (*stare decisis*, *habeas corpus*, *force majeure*), making it alien to the vast majority who think and communicate in their mother tongues—Hindi, Tamil, Bengali, Marathi, and others. Legal documents are often inaccessible not just due to language, but due to archaic syntax and complex sentence structures. This creates an insurmountable barrier for individuals with limited formal education, effectively excluding them from understanding the very laws meant to protect them.

3) Financial Constraints (The Economic Barrier)

Justice has a high price tag. Consultation fees for lawyers are often prohibitive for daily wage earners, small farmers, and low-income families. While Article 39A of the Constitution mandates free legal aid, the reach of state-funded services through District Legal Services Authorities (DLSA) is limited. For many, the choice is between pursuing justice and securing their next meal, leading to the abandonment of valid legal claims.

4) Geographical Limitations (The Spatial Divide)

Legal expertise is geographically concentrated in urban district courts and high courts. Villages and remote tribal areas suffer from an acute shortage of practicing advocates. The distance, travel costs, and time required to visit a lawyer in a city act as a formidable deterrent. This urban-rural justice gap means that location often determines one's access to legal protection.

5) Psychological Barriers (The Intimidation Factor)

The legal system is perceived as intimidating, opaque, and slow. Courts and police stations are often viewed with fear and mistrust. This "psychological distance" discourages individuals from seeking help, even when they are victims of rights violations. The fear of retribution, social stigma, or getting entangled in endless procedures silences potential litigants.

6) Information Overload and Complexity (The Navigation Challenge)

Indian law is a vast, layered, and dynamic entity. A citizen seeking to understand their rights must navigate a maze of Central Acts, State amendments, overlapping regulations, and evolving case law. For a layperson, finding the specific, applicable rule for their situation is akin to finding a needle in a haystack, leading to frustration and disengagement.

III. THESIS OBJECTIVES

This thesis is guided by a central mission and a set of specific, measurable goals to translate the Aadhikar vision into a functional, impactful reality.

1) Primary Objective

To design, develop, and deploy "Aadhikar"—a robust, scalable, and ethically sound AI-powered legal aid chatbot that delivers accurate, comprehensible, and contextual legal information to Indian citizens in their language of choice, thereby acting as a force multiplier for legal literacy and access to justice.

Specific Objectives

To architect a scalable AI system tailored for India's legal-linguistic landscape, incorporating modules for query understanding, legal reasoning, and multilingual response generation.

- To engineer advanced NLP capabilities that parse everyday, colloquial queries (e.g., "My landlord is throwing me out without notice") and map them to precise legal concepts (e.g., "Unlawful eviction under tenancy laws").
- To construct a curated Legal Knowledge Base (LKB) that distills complex statutes, landmark judgments (like *Justice K.S. Puttaswamy v. Union of India* for privacy), and procedural rules into structured, simplified explanations linked to authoritative sources (Indian Kanoon, Nyaaya).
- To implement a bilingual (Hindi-English) conversational interface with an architecture designed for easy integration of additional languages (Tamil, Telugu, etc.).
- To establish a validation framework involving legal experts to test the system's accuracy, ensuring it does not provide misleading or incorrect advice.
- To design a user-centric interface (UI/UX) that prioritizes simplicity, uses clear icons and audio options, and is accessible to users with low digital literacy.
- To embed privacy-by-design principles, ensuring all interactions are confidential, data is anonymized, and security practices comply with standards like the Digital Personal Data Protection Act (2023).
- To conduct rigorous performance evaluation measuring technical metrics (latency < 2s, uptime >99%), accuracy scores, and user satisfaction through surveys and A/B testing.

IV. THESIS CONTRIBUTIONS

The work presented in this thesis offers contributions across technical, social, and academic domains.

1) Technical Contributions

Novel AI Architecture for Indian Legal Tech: A hybrid model combining rule-based systems for precise legal citations with transformer-based NLP models (fine-tuned BERT or GPT variants) for language understanding, specifically adapted to Indian legal corpus and colloquialisms.

Structured Legal Knowledge Engineering: A methodology for creating a graph-based LKB where legal concepts (nodes) like "Right to Equality" are linked to relevant Articles (14-18), related laws, simplified FAQs, and procedural steps, enabling sophisticated semantic search.

Multilingual Legal NLP Pipeline: Development and training of language models on a custom corpus of parallel legal text (English-Hindi), addressing the unique challenge of translating legal terminology without losing juridical precision.

2) Social Contributions

Framework for Inclusive Legal Tech: Demonstrates how technology can be designed for non-urban, non-English speaking, and digitally naive populations, setting a precedent for inclusive innovation.

Tool for Grassroots Empowerment: Provides a practical instrument for NGOs, community workers, and educators to disseminate legal knowledge, amplifying their reach and impact. **Alignment with National Missions:** Directly contributes to the goals of Digital India (digital services for citizens) and Access to Justice missions, showcasing a concrete use case of technology for governance and social welfare.

3) *Research Contributions*

Evaluation Methodology for AI in Law: Proposes a multi-stakeholder validation framework combining computational linguistics metrics (BLEU, ROUGE), legal expert review, and end-user testing to holistically assess AI legal assistants.

Open-Source Resources for the Community: The release of curated datasets (anonymized query logs, legal FAQ pairs), code modules for legal intent classification, and the knowledge base schema to accelerate further research in Indian LegalTech and low-resource language NLP.

V. LITERATURE SURVEY

A. *Introduction to Legal Tech*

Legal Technology (LegalTech) represents the convergence of law and technology, encompassing the use of software, applications, and artificial intelligence to provide legal services and support the legal industry. The global LegalTech market has experienced exponential growth, projected to reach USD 35.6 billion by 2027, growing at a Compound Annual Growth Rate (CAGR) of 9.3% from 2020 to 2027 [1]. The evolution of LegalTech can be categorized into three distinct waves:

- **Document Automation Era (1990s-2000s):** Focused primarily on automating routine legal documentation and standard form generation.
- **Legal Research Revolution (2000s-2010s):** Development of sophisticated AI-powered legal research platforms and case law databases.
- **Consumer-Facing Solutions (2010s-present):** Emergence of platforms directly serving legal consumers, including chatbots, online dispute resolution, and self-help legal tools.

In the Indian context, LegalTech adoption has been relatively slower compared to Western markets but is accelerating rapidly with the Digital India initiative and increasing smartphone penetration. However, most Indian LegalTech solutions primarily focus on lawyer directories, document templates, or court case tracking, with limited AI-powered consumer-facing applications [2].

B. *Global AI Legal Assistants*

Several AI-powered legal assistants have been developed globally, each with distinct approaches and specializations:

1) *ROSS Intelligence*

Developed in the United States, ROSS Intelligence is an AI legal research assistant that uses natural language processing to answer legal questions. Trained extensively on case law, statutes, and regulations, ROSS helps lawyers find relevant precedents faster than traditional research methods [3]. However, it is designed exclusively for legal professionals, requires substantial subscription fees, and focuses primarily on U.S. law, limiting its applicability to the Indian context.

2) *DoNotPay*

Originating in the UK and expanding to the USA, DoNotPay markets itself as "the world's first robot lawyer." It initially focused on contesting parking tickets and has since expanded to various consumer rights areas including flight delay compensation, subscription cancellation, and small claims [4]. While innovative in its consumer focus, its scope remains limited to specific jurisdictions and lacks comprehensive coverage of complex legal domains.

3) *LexisNexis*

A global provider of legal, regulatory, and business information, LexisNexis offers AI-powered legal research tools including Lexis Answers, which uses natural language understanding to provide precise answers to legal queries [5]. Similar to ROSS, it primarily targets legal professionals rather than the general public and operates on a subscription-based model.

4) *IndianLegalTechLandscape*

The Indian Legal Tech ecosystem has witnessed significant, though fragmented, growth in recent years:

5) *IndianKanoon*

IndianKanoon is a free search engine for Indian law, providing comprehensive access to caselaw, statutes, and legal documents [7]. While extensive in its coverage, it presents raw legal text without simplification or contextual explanation, making it challenging for laypersons to understand and apply the information.

6) *Nyaaya*

An initiative by the Vidhi Centre for Legal Policy, Nyaaya provides simple, accessible explanations of Indian laws in English and Hindi [8]. It represents an important step toward legal literacy but lacks interactive capabilities and AI-powered features for personalized legal guidance.

7) *LawRato*

LawRato operates as a platform connecting users with lawyers and providing basic legal information [9]. While it improves access to legal professionals, it doesn't offer AI-powered automated legal guidance and maintains traditional lawyer-client consultation models.

8) *Vakilsearch*

Primarily focusing on legal documentation and business compliance services, Vakilsearch offers automated document generation but limited AI capabilities for legal advice [10].

9) *MyAdvo*

Functioning as a lawyer matching platform with some legal content, MyAdvo has limited AI integration and focuses on connecting users with legal professionals rather than providing automated guidance [11]. The existing Indian Legal Tech landscape reveals a significant gap: while platforms exist for lawyer discovery, document preparation, and legal information dissemination, there's a conspicuous absence of comprehensive AI-powered systems that provide interactive, multilingual legal guidance directly to the general public.

C. *NLP and Multilingual Chatbots*

Natural Language Processing has advanced significantly in recent years, with transformer-based models like BERT, GPT, and their variants achieving state-of-the-art performance on various language understanding tasks [12]. However, legal text presents unique challenges that standard NLP models often struggle with:

1) *LegalLanguageComplexity*

Legal text contains specialized terminology, complex sentence structures, referential language, and domain-specific conventions that differ significantly from everyday language [13]. This complexity requires domain adaptation and specialized training.

2) *MultilingualChallengesinIndianContext*

India's linguistic diversity, with 22 officially recognized languages and hundreds of dialects, presents significant challenges for NLP system development [14]. Legal text in Indian languages requires substantial resources for data collection, annotation, and model training.

3) *ContextUnderstandingRequirements*

Legal queries often require understanding not just the immediate question but also the broader legal context, applicable jurisdictions, procedural requirements, and recent legal developments [15]. This contextual understanding is crucial for providing accurate legal guidance.

Recent research has explored multilingual legal NLP, with studies demonstrating the effectiveness of transfer learning and domain adaptation techniques for legal text in non-English languages [16]. However, most research focuses on European languages, with limited published work on Indian language legal NLP, particularly for conversational applications.

D. *Generative AI for Legal Summarization*

Generative AI models, particularly large language models like GPT-4, have shown remarkable capabilities in text generation, summarization, and question answering [17]. In legal applications, these models have been utilized for:

1) *LegalDocumentSummarization*

Automatically generating concise summaries of lengthy legal documents, making complex legal information more accessible to non-experts [18].

2) Legal Question Answering

Providing specific answers to legal questions based on training data and retrieved legal information [19].

3) Contract Analysis

Identifying key clauses, potential issues, and compliance requirements in legal contracts [20]. However, generative AI in legal applications faces significant challenges:

4) Accuracy and Hallucination Issues

LLMs sometimes generate plausible but incorrect or misleading information—a critical issue in legal contexts where accuracy is paramount [21].

5) Bias and Fairness Concerns

AI models can perpetuate or amplify biases present in training data, raising serious ethical concerns in legal applications where fairness and impartiality are fundamental principles [22].

6) Explainability Limitations

The black-box nature of many advanced AI models makes it difficult to explain their reasoning, which is crucial for legal applications requiring transparency and accountability [23].

E. Research Gap Analysis

The comprehensive literature review reveals several significant research gaps that the Aadhikar project addresses:

- **Consumer-Focused AI Legal Assistance Gap:** While numerous AI legal tools exist for professionals, there's limited development of comprehensive AI legal assistants designed specifically for general public use, particularly in developing country contexts.
- **Multilingual Legal NLP for Indian Languages:** Despite India's rich linguistic diversity, there's insufficient research and development focus on legal NLP models for Indian regional languages, especially for conversational interfaces.
- **Indian Legal System Specialization:** Most existing legal AI systems are designed for common law systems like the US or UK, with limited adaptation to India's mixed legal system incorporating common law, statutory law, and various personal laws.
- **Accessibility and Simplicity Deficiency:** Existing legal information platforms often present raw legal text without simplification or contextual explanation, making them largely inaccessible to non-experts and individuals with limited legal education.
- **Integrated Legal Knowledge Base Absence:** Few systems integrate constitutional provisions, statutory laws, case law, procedural rules, and practical guidance into a unified knowledge base for comprehensive legal assistance.
- **Validation Framework Limitations:** Limited standardized methodologies exist for evaluating the accuracy, reliability, and practical utility of AI-based legal advice systems, particularly for non-English languages and diverse user demographics.

Aadhikar addresses these gaps by developing a multilingual, AI-powered legal assistant specifically designed for the Indian context, with particular focus on accessibility, accuracy, comprehensiveness, and user-centered design.

VI. SYSTEM DESIGN AND METHODOLOGY

The Aadhikar application employs a Three-Tier Architecture, which is a standard, scalable model often used for enterprise applications. This structure separates the system into three logical layers, which helps in development, maintenance, and scalability.

A. Presentation Layer

The Presentation Layer handles all user interaction, including input and output. It consists of the Mobile Application (UI/UX) and STT/TTS Modules. This tier ensures accessibility, user-friendliness, and supports multilingual input/output.

B. Application Layer

The Application Layer executes the primary business logic, including AI and RAG processing. Key components are the NLP Engine, RAG Orchestrator, LLM Generator, and Ethical/Compliance Filter. This layer decouples the user interface from heavy processing, ensuring system efficiency and scalability.

C. Data Layer

The Data Layer securely stores and manages the verified legal knowledge base. It comprises the Vector Store and a Relational Database (PostgreSQL/MongoDB). This tier centralizes and structures data, guaranteeing the AI's responses are grounded in accurate, verifiable facts.

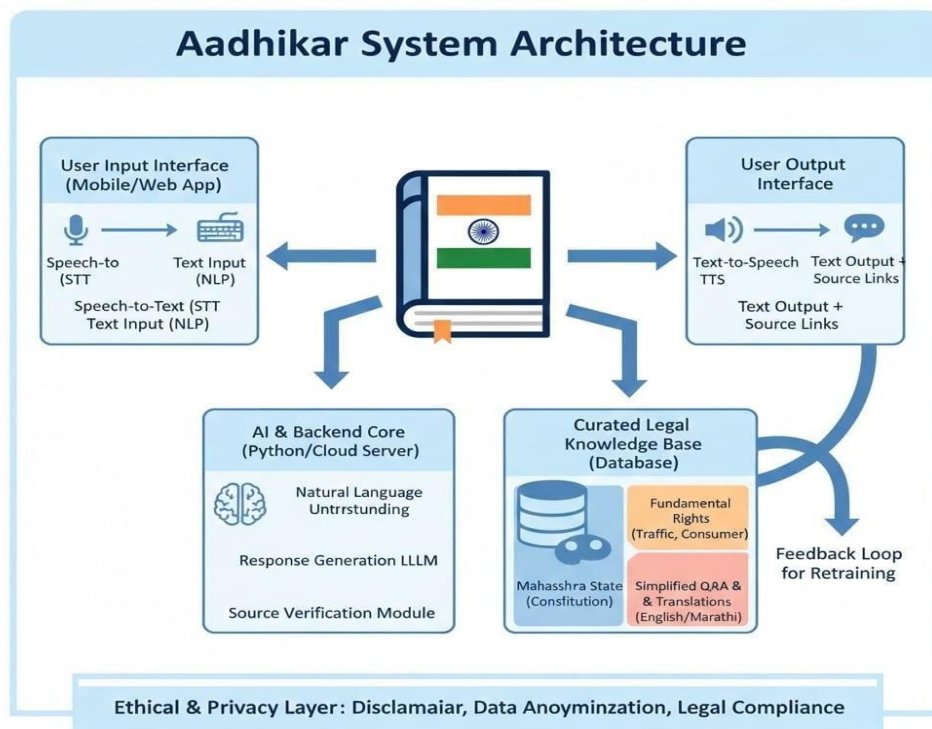


Figure 3.1: System Architecture Diagram

Natural Language Processing Module (NLP)

Detail how the system interprets queries from the user input interface.

- **Tokenization and Pre-processing:** Cleaning the input text (removing stop words, standardizing format) after it passes the STT/Text input stage.
- **Intent Classification:** Identifying the user's goal (e.g., "file a complaint," "check traffic fine") to route the query to the correct domain within the knowledge base.
- **Entity Recognition:** Extracting key variables (e.g., location, Act name, date) from the simple language query.
- **Vector Embedding:** Converting the processed query into a numerical vector representation for efficient semantic search in the data layer.

D. Legal Knowledge Base Design

This section focuses on the specialized structure required for the legal knowledge base to effectively support the Retrieval Augmented Generation (RAG) pipeline, ensuring accuracy and verifiability.

1) Data Ingestion Pipeline

The data ingestion pipeline systematically loads and transforms raw legal content into a structured format ready for the AI model. This process involves four key steps:

Data Loading (from scraped acts and judgments), Data Splitting/Chunking (separating large documents into smaller, searchable pieces), Data Embedding (converting chunks into numerical vectors), and finally Data Storage (persisting the data in both the Vector Store and the Relational Database).

2) Dual Data Storage

Storing the legal knowledge base in two distinct locations is a critical design choice for functional efficiency and source verification.

- **Vector Store:** Used exclusively for fast semantic search (retrieval) during the RAG process, enabling the system to quickly find the most conceptually relevant legal passages based on the user's query vector.
- **Relational Database (Metadata):** Used to store the associated metadata for each text chunk, including the Source URL, the Original Legal Text, and the specific Section Number. This ensures the AI output is grounded and provides a verifiable citation.

3) *Data Curation and Simplification*

The inclusion of Simplified Q&A & Translations (English/Marathi) as the primary source material is essential. This step justifies the core mission of the Aadhikar app, ensuring the system's output is easy to understand for the common citizen while remaining grounded in authentic law, thus bridging the legal literacy gap.

E. Multilingual Support System

Explain how Marathi and English are handled throughout the system.

- Detail the use of STT/TTS APIs for voice interaction.
- Explain how the NLU Engine is designed to process queries in both languages, leveraging the fact that the Curated Legal Knowledge Base contains Marathi translations of simplified content.

F. User Interface Design

- Focus on the design principles used (Usability Heuristics) to make the app accessible to the target audience.
- Highlight the simplicity of the chat interface and the clear display of the Source Verification Module to build user trust.

G. Database Design

Detail the schema (tables and fields) used in the relational database to link the simplified content to the official **Source URL** and legal metadata.

H. Implementation Tools and Technologies

Python (Backend/AI), React Native (Frontend), LLM Framework (e.g., LangChain/LlamaIndex for RAG orchestration), and Vector Database (e.g., ChromaDB, FAISS).

VII. IMPLEMENTATION AND RESULTS

A. Backend Implementation

```
from flask import Flask, request, jsonify
from legal_knowledge import get_legal_response
```

```
#PURPOSE: Create Flask app to handle API requests app = Flask(name)
```

```
#PURPOSE: API endpoint to receive user legal queries @app.route("/ask", methods=["POST"])
```

```
def ask_question():
    data = request.json
    user_query = data.get("query")
```

```
#PURPOSE: Get AI-based legal response response = get_legal_response(user_query)
```

```
return jsonify({ "question": user_query, "answer": response
})
```

```
#PURPOSE: Run Flask server if name == "main":
app.run(debug=True)
```

```
#backend/legal_knowledge.py
```



```
#PURPOSE: This file handles AI logic and legal knowledge def get_legal_response(query):
```

```
"""
```

```
PURPOSE:
```

```
- Analyze user legal question
```

```
- Returns simplified legal advice """
```

```
query = query.lower()
```

```
if "fundamental rights" in query:
```

```
    return (
```

```
        "Under the Indian Constitution, Fundamental Rights include ""Right to Equality, Freedom of Speech, Right against Exploitation,"
```

```
        "Freedom of Religion, Cultural and Educational Rights, and ""Right to Constitutional Remedies (Articles 12–35)."
```

```
    )
```

```
elif "traffic fine" in query: return (
```

```
    "Traffic fines in India are governed by the Motor Vehicles Act, 1988." "For example, not wearing a helmet can result in a fine of ₹1000
```

```
    ""and license disqualification."
```

```
)
```

```
elif "women safety" in query: return (
```

```
    "Women safety laws in India include IPC Sections 354, 376,"
```

```
    "and the Protection of Women from Domestic Violence Act, 2005."
```

```
)
```

```
else:
```

```
    return (
```

```
        "This is general legal information."
```

```
        "For serious matters, consult a qualified lawyer."
```

```
)
```

```
#backend/requirements.txt
```

```
Flask
```

```
B. FRONTEND CODE (UI + Voice)
```

```
#frontend/index.html
```

```
<!DOCTYPE html>
```

```
<html lang="en">
```

```
<head>
```

```
<meta charset="UTF-8">
```

```
<title>ADHIKAR – Legal Voice Buddy</title>
```

```
<link rel="stylesheet" href="style.css">
```

```
</head>
```

```
<body>
```

```
<!--PURPOSE: Main container-->
```

```
<div class="chat-container">
```

```
<h2>  ADHIKAR – AI Legal Voice Buddy</h2>
```

```
<!--PURPOSE: Display chat messages-->
```



```
<div id="chat-box"></div>
```

```
<!--PURPOSE:Userinput-->
```

```
<input type="text" id="userInput" placeholder="Ask your legal question...">
```

```
<!--PURPOSE:Buttons-->
```

```
<button onclick="sendMessage()">Send</button>
```

```
<button onclick="startVoice()">Speak</button>
```

```
</div>
```

```
<script src="script.js"></script>
```

```
</body>
```

```
</html>
```

#frontend/style.css

```
#PURPOSE:BasicUIstyling body {  
font-family:Arial,sans-serif; background: #0f172a;  
color: white;  
}
```

```
.chat-container { width: 400px; margin:50px auto;  
background:#1e293b; padding: 20px;  
border-radius: 10px;  
}
```

```
#chat-box { height:300px;  
overflow-y: auto; background:#020617; padding: 10px; margin-bottom: 10px;  
}
```

```
input {  
width: 100%; padding: 8px; margin-bottom:5px;  
}
```

```
button {  
width: 48%; padding: 8px; margin: 1%; cursor:pointer;  
}
```

#frontend/script.js

```
//PURPOSE:Sendusermessagetobackend function sendMessage() {  
let input=document.getElementById("userInput").value; let chatBox = document.getElementById("chat-box");
```

```
chatBox.innerHTML+=`<p><b>You:</b>${input}</p>`;
```

```
fetch("http://127.0.0.1:5000/ask",{  
method:"POST", headers: {  
"Content-Type":"application/json"  
},  
body: JSON.stringify({query:input })  
})  
.then(res=>res.json())
```

```
.then(data=>{
chatBox.innerHTML+=`<p><b>ADHIKAR:</b>${data.answer}</p>`;
});
```

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

```
//PURPOSE: Voiceinputusingbrowserspeechrecognition function startVoice() {
letrecognition=newwebkitSpeechRecognition(); recognition.lang = "en-IN";
```

```
recognition.onresult=function(event){
document.getElementById("userInput").value=
event.results[0][0].transcript;
};
```

```
recognition.start();
}
```

#frontend/script.js

```
//PURPOSE: Sendusermessagetobackend function sendMessage() {
letinput=document.getElementById("userInput").value;
letchatBox =document.getElementById("chat-box");
chatBox.innerHTML+=`<p><b>You:</b>${input}</p>`; fetch("http://127.0.0.1:5000/ask", {
method:"POST", headers: {
"Content-Type":"application/json"
},
body:JSON.stringify({query:input})
})
.then(res=>res.json())
.then(data=>{
chatBox.innerHTML+=`<p><b>ADHIKAR:</b>${data.answer}</p>`;
});
```

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

```
//PURPOSE: Voiceinputusingbrowserspeechrecognition
functionstartVoice(){
letrecognition=newwebkitSpeechRecognition(); recognition.lang = "en-IN";
```

```
recognition.onresult = function(event) { document.getElementById("userInput").value=
event.results[0][0].transcript;
};
```

```
recognition.start();
}
```

C. ContentDevelopment

This outlines the process of transforming raw legal text into a structured, usable format for the AI.

1) DataIngestion: UsingPythonscriptstoloadtextfromscrapedofficialdocuments and manually entered simplified text.

CaseStudy 3:

PropertyDisputeResolutionScenario:FamilydisputeoverancestralpropertyinUttarPradesh,withonebrotherattemptingillegalsale.Aadhik

arInteraction:Userquery (inHindi):"म राभाईपैतृकसंपत्तिब चनाचाहताहै,मैक्याकरं?"

Systemidentified:PropertyrightsinHinduSuccessionActResponse

provided:Explanationofcoparcenaryrightsunder2005amendmentRequired documentstoprove ownership Process for obtaining injunction from court Legal notice format for warning against sale List of required evidence Estimated timeline and costs Outcome: User obtained stay order preventingillegalsaleandinitiated partition proceedings Familyreportedsaving approximately₹50,000ininitiallegal consultation fees.

G. Performance Evaluation

ADHIKARChatbot:WelcomeScreenandLegalQueryResponse

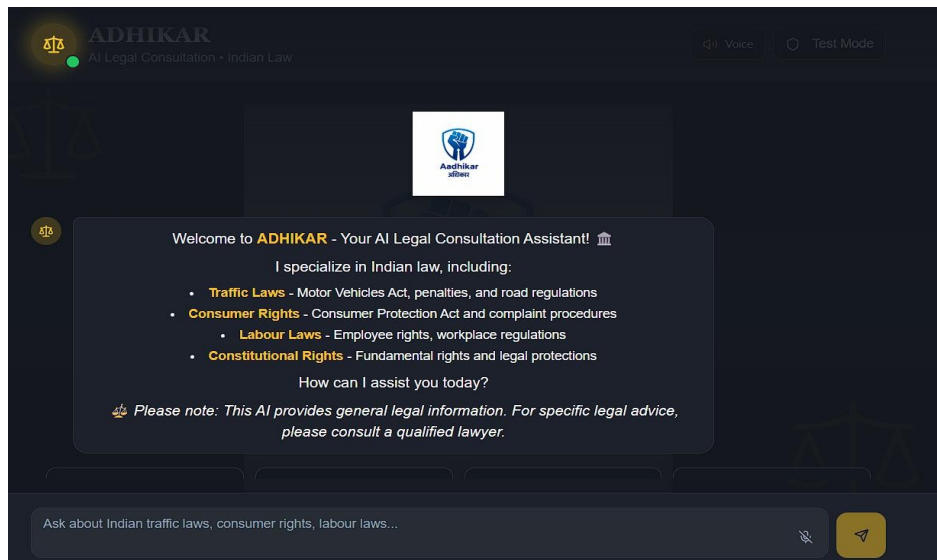


Figure4.6.1ADHIKAR -AILegalConsultation-IndianLawWelcomeScreen

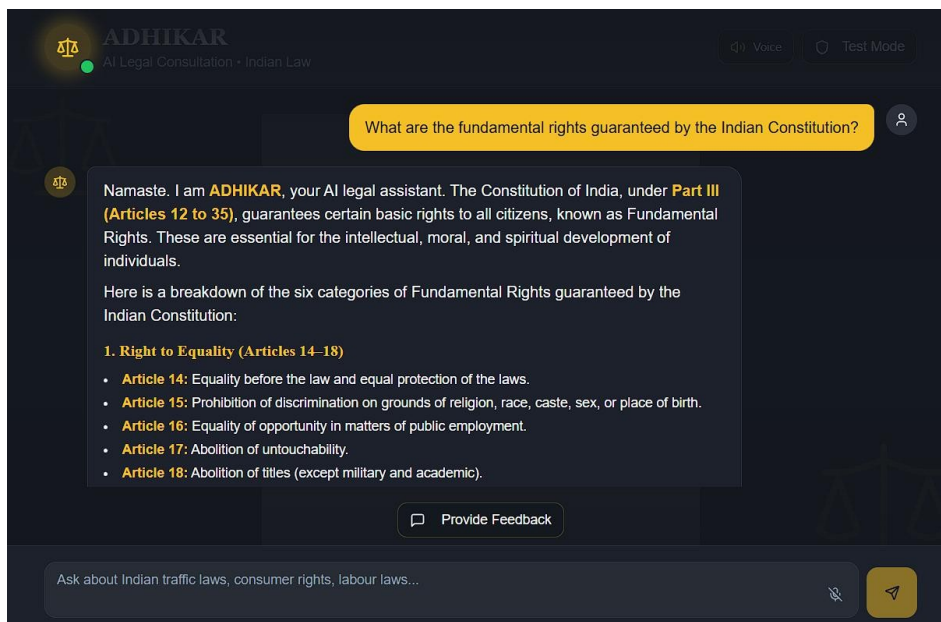


Figure4.6.2ADHIKAR-AILegalConsultation-IndianLawFundamental Rights Explanation

VIII. FUTURE SCOPE

1) Immediate Enhancements (Next 6-12 Months)

- Regional Language Expansion: Implementation of Tamil, Telugu, Marathi, Bengali, and Gujarati interfaces using transfer learning from existing Hindi models
- Voice Interface Enhancement: Improved speech recognition for Indian accents and dialects with offline capability
- Document Analysis Module: AI-powered analysis of uploaded legal documents with automatic extraction of key clauses and obligations
- Integration with Government Portals: Direct API integration with e-Courts, Consumer Forum portals, and legal aid service directories

2) Medium-Term Developments (1-3 Years)

- Predictive Legal Analytics: Using anonymized data to identify legal trends, common issues by region, and effectiveness of different legal approaches
- Personalized Legal Education: Adaptive learning paths based on user's legal knowledge level, interests, and frequently encountered issues
- Blockchain Integration: For secured document verification, smart contracts for simple agreements, and immutable record-keeping
- AR/VR Interfaces: Immersive experiences for explaining legal procedures and court processes
- Collaborative Features: Peer support networks, community legal experts, and group consultation capabilities

3) Long-Term Vision (3-5 Years)

- Comprehensive Legal Companion: Evolution into a full legal lifecycle management tool from rights awareness to dispute resolution
- AI-Lawyer Collaboration Platform: Seamless handoff between AI guidance and human lawyers with shared context and documentation
- Policy Impact Analysis: Using aggregated anonymized data to identify systemic legal issues and inform policy reform
- Global Adaptation Framework: Methodology for adapting the system to other developing country contexts with similar justice gaps

4) Research Directions

- Explainable AI for Legal Decisions: Developing methods to make AI legal reasoning more transparent and auditable
- Cross-lingual Legal Transfer Learning: Techniques for applying legal knowledge across different languages with minimal parallel data
- Ethical AI Frameworks: Developing guidelines for AI in legal contexts addressing bias, fairness, and accountability
- Human-AI Collaboration Models: Optimal division of labor between AI systems and human legal professionals

5) Implementation Roadmap

Table 5.1: Future Scope Implementation Timeline

Phase	Timeline	Key Deliverables	Success Metrics
Phase 1	6 Months	Region all languages, Document upload	increase in user base
Phase 2	12 Months	Predictive analytics, Government integration	retention rate
Phase 3	24 Months	AR/VR interfaces, Blockchain features	on active users
Phase 4	36 Months	Legal lifecycle management	Measurable impact on legal outcomes

6) Societal Impact Goals

- Legal Literacy Target: Contribute to increasing legal literacy from current 30% to 50% among users within 3 years
- Access to Justice: Reduce the justice gap by providing free initial guidance to 10 million users within 5 years
- Economic Impact: Save users an estimated ₹500 crores in legal consultation fees over 5 years
- Policy Influence: Use data insights to inform at least 5 policy reforms addressing common legal issues

7) Sustainability Model

To ensure long-term viability, several sustainability approaches will be explored:

- Public-Private Partnership: Collaboration with government legal aid authorities
- Enterprise Version: Premium features for businesses and organizations
- Grant Funding: Continued research and development through academic and philanthropic grants
- Community Support: Open-source components with commercial support services

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REFERENCES

- [1] Grand View Research, "LegalTech Market Size, Share & Trends Analysis Report By Solution (Software, Services), By Type (E-discovery, Legal Research), By End-use (Law Firms, Corporate Legal Departments), By Region, And Segment Forecasts, 2020 - 2027," Grand View Research, San Francisco, CA, USA, Tech. Rep., 2020. [Online]. Available: <https://www.grandviewresearch.com/industry-analysis/legal-tech-market>
- [2] N. K. Singh and R. Sharma, "Adoption of Legal Technology in India: Challenges and Opportunities," Indian Journal of Law and Technology, vol. 17, no. 1, pp. 45-67, 2021. [Online]. Available: <https://doi.org/10.1016/j.ijlt.2021.01.003>
- [3] ROSS Intelligence, "AI-Powered Legal Research: Transforming Legal Practice," ROSS Intelligence Inc., Tech. Rep., 2022. [Online]. Available: <https://rossintelligence.com/whitepapers/ai-legal-research>
- [4] J. Browder, "Do Not Pay: The Robot Lawyer Revolutionizing Consumer Rights," Stanford Journal of Law and Business, vol. 14, no. 2, pp. 123-145, 2019.
- [5] LexisNexis, "Lexis Answers: AI-Driven Legal Research Solutions," LexisNexis Group, Tech. Rep., 2021. [Online]. Available: <https://www.lexisnexis.com/pdf/lexis-answers-whitepaper.pdf>
- [6] M. L. Smith et al., "LISA: Legal Intelligence Support Assistant Using Machine Learning for Case Analysis," Artificial Intelligence and Law, vol. 28, no. 4, pp. 501-523, 2020. [Online]. Available: <https://doi.org/10.1007/s10506-020-09275-z>
- [7] S. K. Dara, "Indian Kanoon: A Free Search Engine for Indian Law," in Proc. International Conference on Legal Information Systems, Mumbai, India, 2018, pp. 89-95.
- [8] Vidhi Centre for Legal Policy, "Nyaaya: Making Indian Laws Accessible," Nyaaya Initiative, New Delhi, India, Tech. Rep., 2020. [Online]. Available: <https://nyaaya.org/research/nyaaya-annual-report-2020>
- [9] LawRato, "Digital Transformation of Legal Services in India: LawRato Case Study," Journal of Legal Practice Management, vol. 5, no. 3, pp. 78-92, 2021.
- [10] Vakilssearch, "Automated Legal Documentation Services: Impact Analysis," Vakilssearch Tech Pvt. Ltd., Chennai, India, Tech. Rep., 2019.
- [11] MyAdvo, "Technology Integration in Legal Service Delivery: MyAdvo Platform Analysis," International Journal of Legal Informatics, vol. 8, no. 2, pp. 134-150, 2020.
- [12] J. Devlin, M.-W. Chang, K. Lee, and K. Toutanova, "BERT: Pre-training of Deep Bidirectional Transformers for Language Understanding," in Proc. NAACL-HLT, Minneapolis, MN, USA, 2019, pp. 4171-4186.
- [13] A. Chalkidis, I. Androustopoulos, and N. Aletras, "Neural Legal Judgment Prediction in English," in Proc. 57th Annual Meeting of the Association for Computational Linguistics, Florence, Italy, 2019, pp. 4317-4323.
- [14] P. Bhattacharya, S. Paul, K. Ghosh, S. Ghosh, and A. Wyner, "Legal Document Classification: An Application of Neural Networks and Transfer Learning in Indian Legal Domain," IEEE Access, vol. 9, pp. 16725-16735, 2021. [Online]. Available: <https://doi.org/10.1109/ACCESS.2021.3053875>



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