

# LawSage: AI-Powered Legal Advisory Platform

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**Abstract—** The Indian legal system is a complex and multifaceted framework, often leaving individuals, legal professionals, and students grappling with the challenges of comprehension and accessibility. The LawSage project introduces an AI-Powered Legal Advisory System to address this pressing need. This pioneering initiative harnesses the power of Large Language Models (LLMs) to democratize legal understanding and empower stakeholders across the Indian legal landscape. LawSage aims to bridge the gap between intricate legal frameworks and the public's knowledge by providing accessible and reliable legal assistance. Leveraging cutting-edge LLM technology, this system endeavors to democratize legal knowledge, catering to unrepresented individuals, legal professionals, students, and the general public.

**Keywords :** *Large Language Models, Retrieval-Augmented Generation, LoRA, LawSage*

## I. INTRODUCTION

Driven by a desire to democratize legal knowledge and empower stakeholders across the legal spectrum, We began exploring innovative solutions that could bridge this divide. Our vision was to create a platform that would demystify complex legal concepts, making them accessible and comprehensible to the broader public, while simultaneously supporting legal professionals in their practice. Inspired by the remarkable advancements in artificial intelligence (AI), natural language processing (NLP), and groundbreaking transformer architecture, We recognized the transformative potential these cutting-edge technologies could bring to the legal domain. The idea of leveraging Large Language Models (LLMs), to interpret and distill complex legal texts, case laws, and regulations into actionable insights and recommendations.

### A. Project Statement

In India, comprehending the multifaceted landscape of laws, regulations, and legal frameworks poses a significant challenge for individuals, legal practitioners, and students alike. The intricacies of the legal system often lead to a lack of understanding, thereby impeding access to justice and constraining informed decision-making in legal matters. This knowledge disparity perpetuates a cycle of legal illiteracy and disempowerment, particularly among those who lack sufficient resources or legal representation.

### B. Project Description

We recognized the significant challenges individuals, legal professionals, and students face in navigating India's intricate legal landscape. Through your experiences and interactions within the legal ecosystem, We witnessed firsthand the knowledge gaps, accessibility barriers, and lack of legal literacy that often hindered individuals from fully understanding their rights and obligations.

### C. Objective

LawSage aims to foster a more informed and engaged society, facilitating better decision-making and enabling proactive measures to mitigate legal risks. Additionally, the system supports legal professionals by providing efficient research capabilities, assisting in case analysis, and streamlining legal workflows. This project represents a significant stride towards enhancing access to justice and promoting legal literacy in India. By harnessing the transformative potential of artificial intelligence, this initiative strives to create a more inclusive and equitable legal landscape, empowering individuals and strengthening the foundations of the rule of law.

## II. LITERATURE SURVEY

The legal profession has traditionally been characterized by its reliance on vast repositories of complex legal texts, statutes, and case laws, making it challenging for individuals. The percentage of legal representation in India ranks among the lowest globally. This means that only a small fraction of the population is receiving legal aid, even though about 80% of the population is entitled to it.[1] Lack of legal awareness and understanding of legal rights among disadvantaged sections of society is a significant issue that needs to be addressed. The legal services authority has been set up at the national and state levels to ensure that constitutional guarantees are accessible to all, but poverty, deprivation, and lack of awareness continue to be major barriers. The Bar Council of India and the University Grant Commission are responsible for regulating legal education in India, and efforts are being made to improve the legal scenario through legal aid clinics and training for young lawyers. However, there is still a need for increased legal aid representation and awareness in India.

Recent advancements in artificial intelligence (AI), natural language processing (NLP), and transformer models have opened up new avenues for improving legal services.

Transformer models, such as BERT (Bidirectional Encoder Representations from Transformers) and GPT (Generative Pre-trained Transformer), have gained significant traction in NLP tasks due to their ability to capture context and understand complex language patterns.[2]

Foundational models like Llama 2 are a collection of large language models (LLMs) developed by Meta AI. These models come in a range of sizes, from 7 billion parameters to 70 billion. Llama 2 models are trained on a vast amount of text data, giving them a strong understanding of language and the ability to generate human-quality text. LLaMA is specifically designed to be fine-tuned for various tasks.[3] This implies that it can be utilized to refine pre-existing knowledge on legal text (using a meticulously selected dataset) and customize it for particular facets of Indian law, such as contract analysis, interpretation of case law, or answering legal queries. LoRA (Low-Rank Adaptation) is a technique designed to fine-tune large language models (LLMs) more efficiently compared to traditional methods. In LoRA instead of modifying all the weights in a massive pre-trained LLM, LoRA focuses on updating a smaller set of parameters within the model. These parameters are contained in a special adapter module called the LoRA adapter. By only adjusting a smaller portion of the model, LoRA significantly reduces training time compared to traditional fine-tuning, which can take days or even weeks on powerful hardware. LoRA requires less memory during training because it deals with a smaller set of parameters. This is crucial for working with very large LLMs that might not fit on a single GPU.[4]

### III. PROPOSED SYSTEM

The LawSage project aims to address these challenges by developing an AI-powered legal advisory system that leverages cutting-edge technologies to provide accessible, reliable, and context-specific legal assistance. By democratizing legal knowledge and promoting legal literacy, LawSage seeks to create a more inclusive and equitable legal landscape in India, empowering individuals, supporting legal professionals, and strengthening the foundations of the rule of law.

#### A. Features of proposed system

LawSage application platform is divided into 2 modules:

- **Fine-tuned LLaMA-2-7B on Indian legal text:**
  - This module involves fine-tuning the LLaMA-2-7B (Large Language Model with 7 billion parameters) on a carefully curated dataset of Indian legal texts, case laws, regulations, and statutes.
  - Instead of fine-tuning the entire LLaMA-2-7B model, which can be computationally expensive and memory-intensive, the LoRA technique is employed. LoRA is an efficient fine-tuning method that focuses on updating a smaller set of

parameters within the pre-trained model.

- This approach significantly reduces the training time and computational resources required compared to traditional fine-tuning methods. The LoRA fine-tuned LLaMA-2-7B model serves as the core component for providing accurate and domain-specific legal interpretations and analyses.
- By fine-tuning on a domain-specific dataset, the model can develop a deeper understanding of legal concepts, terminologies, and contexts relevant to the Indian legal landscape.
- This fine-tuned model serves as the foundation for providing accurate and reliable legal interpretations, analyses, and recommendations within the LawSage platform.

#### • RAG service:

- The LawSage RAG service is a specialized module that combines the fine-tuned LLaMA-2-7B model with a retrieval component, enabling efficient and context-aware legal information retrieval.
- The retrieval component consists of a knowledge base or corpus of legal documents, case laws, and regulations, organized and indexed for efficient retrieval.
- The retrieved information is then passed to the fine-tuned LLaMA-2-7B model, which generates a contextual response by combining its legal knowledge with the retrieved information.

### IV. ARCHITECTURAL DESIGN

The architecture of the LawSage app consists of several components:

- **LawSage App:** The front-end application that sends queries and receives responses.
- **LLM Service:** The service that selects and utilizes fine-tuned language models to generate text responses based on the user query.
- **RAG Service:** The retrieval-augmented generation service enhances the context of the user query by retrieving relevant information from a vector database using a sentence transformer model.
- **Fine-tuned LLM:** The LawSage fine-tuned language model pre-trained on legal text generates the text response based on the user query.

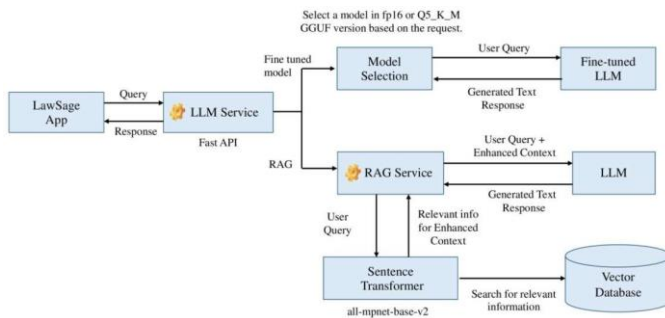


Fig. 1. LawSage Architectural Design

## V. ADVANTAGES

### • Promoting Legal Literacy:

- LawSage has the potential to significantly improve legal literacy by providing tailored legal explanations and recommendations clearly.
- By promoting legal literacy, the project can contribute to better decision-making, proactive measures to mitigate legal risks, and enhanced access to justice.

### • Efficient Legal Research and Case Analysis:

- The system supports legal professionals by providing efficient research capabilities, aiding in case analysis, and streamlining legal workflows.
- This can lead to enhanced quality and efficiency of legal services, ultimately benefiting clients and the broader legal ecosystem.

### • Democratizing Legal Knowledge:

- The project aims to bridge the gap between complex legal frameworks and the public's understanding, making legal knowledge more accessible and comprehensible to individuals, legal professionals, and students.
- By democratizing legal knowledge, the system can empower people to better understand their rights and obligations, fostering a more informed and engaged society.

### • Scalability and Adaptability:

- The modular design of LawSage, with the LoRA fine-tuning technique and the RAG (Retrieval-Augmented Generation) service, allows for scalability and adaptability to different legal domains or jurisdictions.
- This flexibility ensures that the system can evolve and expand to meet the diverse and evolving legal needs of stakeholders.

## VI. CONCLUSIONS

In conclusion, the LawSage project represents a pioneering initiative that harnesses cutting-edge AI and NLP technologies to revolutionize legal accessibility and literacy within the Indian legal system. By leveraging advanced models like LLaMA-2-7B and techniques like LoRA fine-tuning, this system provides accurate, context-aware legal guidance tailored to the needs of individuals, legal professionals, and students.

Through its innovative design, continuous learning capabilities, and commitment to ethical deployment, LawSage democratizes legal knowledge, promotes access to justice, and empowers stakeholders across the legal landscape. This transformative project paves the way for a more inclusive, equitable, and informed legal ecosystem, ultimately strengthening the foundations of the rule of law in India.

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## LawSage Sample Result:

**Prompt:** How does Indian legal system handle cases of online harassment?

**Response:** The Indian legal system addresses cases of online harassment and cyberbullying through various laws and regulations. The Information Technology Act, 2000, and its subsequent amendments provide legal provisions to tackle cybercrimes, including online harassment and cyberbullying. Additionally, the Indian Penal Code contains sections related to offenses such as defamation, stalking, and harassment, which can be applied to online behavior. Law enforcement agencies investigate such cases, and offenders can face penalties under these laws.

**References:**

- Information Technology Act, 2000
- Indian Penal Code

**Prompt:** What are the legal ramifications of India's stance on cryptocurrency regulation?

**Response:** India's stance on cryptocurrency regulation has significant legal ramifications, impacting various aspects of the digital currency ecosystem, including trading, investment, and financial transactions. The regulatory landscape surrounding cryptocurrencies in India has been characterized by uncertainty and evolving policies, reflecting the government's cautious approach towards digital assets. One of the key legal ramifications of India's stance on cryptocurrency regulation is the impact on cryptocurrency exchanges and trading platforms. The Reserve Bank of India (RBI), India's central bank, issued a circular in 2018 directing banks to cease providing services to entities dealing with cryptocurrencies. While this circular was later set aside by the Supreme Court of India in 2020, the regulatory ambiguity has created challenges for cryptocurrency exchanges in operating within the traditional banking system. Additionally, India's stance on cryptocurrency regulation influences its position in the global digital economy and its attractiveness as a destination for cryptocurrency-related businesses and investments.

**References:**

- Reserve Bank of India (RBI) circular on cryptocurrency, 2018
- Supreme Court of India judgment on cryptocurrency circular, 2020

**Prompt:** How can I obtain a commercial vehicle permit in India?

**Response:** To obtain a commercial vehicle permit in India, you need to follow specific procedures outlined by the Motor Vehicles Act, 1988, and the respective State Transport Department regulations. Here's a simplified step-by-step guide:

1. **Eligibility Check:** Ensure that you meet the eligibility criteria set by the State Transport Department. Generally, you must be at least 20 years old, possess a valid driving license for the type of commercial vehicle you intend to operate, and comply with any additional requirements specified by the state.
2. **Application Form:** Obtain the application form for the commercial vehicle permit from the Regional Transport Office (RTO) or the concerned State Transport Department office. You can usually download the form from the official website of the respective department.
3. **Document Submission:** Prepare the required documents, which typically include: - Valid ID proof (such as Aadhaar card, passport, or voter ID) - Proof of address - Vehicle registration certificate - Fitness certificate of the vehicle - Insurance certificate - Tax payment receipts - Permit fee receipt.
4. **Application Submission:** Submit the filled application form along with the required documents to the designated RTO or State Transport Department office. Ensure that all details provided in the application are accurate and complete.
5. **Verification and Inspection:** The RTO or State Transport Department will verify the submitted documents and may conduct a physical inspection of the vehicle to ensure its compliance with safety and emission standards.
6. **Payment of Fees:** Pay the prescribed fees for the commercial vehicle permit. The fee structure may vary depending on the type of vehicle, route, and duration of the permit.
7. **Issuance of Permit:** Upon successful verification and inspection, the RTO or State Transport Department will issue the commercial vehicle permit. The permit will specify the authorized routes, validity period, and any other relevant conditions.
8. **Renewal:** Ensure timely renewal of the commercial vehicle permit before its expiry to avoid penalties or legal consequences.

By following these steps and adhering to the regulations set forth by the Motor Vehicles Act, 1988, you can obtain a commercial vehicle permit in India and legally operate your vehicle for commercial purposes.

**References:**

- The Motor Vehicles Act, 1998