



Academy of  
Engineering

Department of Computer Engineering

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**“AI Powered legal document analyzer”**

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# INTRODUCTION

## Legal Document Analysis:

The process of examining and understanding legal documents such as contracts, agreements, and policies.

## Challenges for Non-Experts:

Complexity of Language: Legal language is often complex, full of jargon, and difficult for everyday people to understand.

Risk of Misinterpretation: Misinterpretation can lead to unfavorable decisions or legal risks.

## Why AI-Powered Analysis?

Automated Extraction and Simplification: AI and Natural Language Processing (NLP) can automatically extract important clauses and simplify legal text.

Accessibility: Makes legal documents accessible and understandable for people without legal training.

AI LEGAL  
LANGUAGE  
PROCESSOR

HIGHLIGHT  
KEY  
CLAUSES

DOCUMENT  
UPLOAD &  
TEXT EXTRACT

SIMPLIFY  
LEGAL  
TEXT

INFORMED  
DECISION  
SUPPORT

# PROBLEM STATEMENT

**To design an AI tool to simplify complex legal documents, –**

**extract key clauses, and flag risks for informed,**

**non-expert decision-making.**

# Objective and Scope:

## **Project Objective**

- Automatically extract key clauses and highlight risky terms in easy-to-understand language.
- Build an AI system that simplifies and explains complex legal documents for non-expert users.

## **Project Scope**

- **In Scope:**
  - Develop NLP models and a user-friendly interface for document upload, analysis and summary.
  - Ensure data privacy, accuracy evaluation and exclude providing formal legal advice.
- **Out of Scope:**
  - Providing formal legal advice or interpretation beyond simplification.

Sr. NO	Title	Author	Publication Details	Key Findings
1.	Legal and human rights issues of AI: Gaps, challenges and vulnerabilities	Rowena Rodrigues	Journal of Responsible Technology 2020	This article provides overview of how AI affects legal and human rights issues, including lack of transparency, cybersecurity risks, privacy and data protection, Legal status.it can be solved by identifying and fixing risks early. Involving more people in AI policy decision. We can Make strong laws to protect privacy.
2.	AI-Powered Legal Documentation Assistant	P. Vimala Imogen, J. Sreenidhi, V. Nivedha	journal of artificial intelligence and capsule network 2024	Developed a web-based AI assistant for drafting, editing, and retrieving legal documents using NLP and chatbots. Improves accuracy, speed, and accessibility in legal documentation. Built with HTML, CSS, JavaScript, PHP, MySQL, and CollectChat AI for secure and interactive user experience. Enhances document customization and reduces manual effort.

3.	<p>Evaluating AI for Law: Bridging the Gap with Open-Source Solutions</p>	<p>Rohan Bhambhoria, Samuel Dahan, Jonathan Li, Xiaodan Zhu</p>	<p>Queen's University, Kingston , Canada 18 April 2024</p>	<p>AI tools like chatGPT answers some legal questions, but they are not always reliable as these are wrong or hallucinated (Fabricated). It lacks deep legal understanding. Researchers suggest building AI systems that are more accurate, fair, and ethical. We have to build law specific models from scratch, using LLMs on legal data, train smaller legal models with detailed human feedback</p>
4.	<p>Enhancing Legal Document Management Efficiency: An AI-Powered Solution Addressing Interpretation Challenges</p>	<p>K. Meena, Gangisetty Tanusha, G. Renuka, Kooram Saraswathi, Dr. S. Anuradha</p>	<p>journal of engineering and technology management April 2024</p>	<p>Proposes an AI-driven system to improve legal document management and interpretation. Compares ML models like Random Forest, CNN, and Decision Tree—Random Forest performs best (<math>\approx 89\%</math> accuracy). Reduces errors, time, and workload in legal case preparation. Ensures ethical AI use with focus on transparency and data privacy. Concludes AI can help accelerate court processes and enhance legal efficiency.</p>

5.	<p><b>The State of Legal Tech in India</b></p>	<p>Manupatra Academy: A pioneer in online legal research in India since 2000</p>	<p>Survey report In 2025</p>	<ul style="list-style-type: none"> <li>• <b>78.4% project AI's main role to be in Legal Research.</b></li> <li>• <b>76.7% expect AI to reduce time on mundane tasks.</b></li> <li>• <b>73.7% already have hands-on experience with Generative AI tools.</b></li> <li>• <b>61.1% name Data Security and Privacy as the biggest barrier.</b></li> <li>• <b>AI hallucination worries 47.9%, mandating human oversight.</b></li> </ul>
6.	<p><b>Artificial Intelligence (AI) in the Indian Legal System</b></p>	<p>Prof. (Dr.) Surendra Pathak and Dr. Ambuj Sharma</p>	<p>KamKus College of Law September 4, 2025.</p>	<ul style="list-style-type: none"> <li>• <b>AI could cut judicial processing time by 40-60%.</b></li> <li>• <b>Advocates save 70-85% of research time using AI tools.</b></li> <li>• <b>Law firms see a minimum 35% cost reduction via contract automation.</b></li> <li>• <b>Predictive analysis boosts case outcome accuracy to 70-80%.</b></li> <li>• <b>15-20% of law curriculum must cover AI ethics and technology.</b></li> </ul>

7.	<p>Summarizing-Indian-Legal-Documents-A-Comparative-Study-of-Models-and-Techniques</p>	<p>Author-Saloni Sharma.</p>	<p>SN Computer science (Academic Journal) 4 August, 2023</p>	<p>A study evaluating seven summarization models on Indian court judgments found the following:</p> <ul style="list-style-type: none"> <li>• Top Performer: The Legal Pegasus model, specifically trained on legal data, was the most effective at summarizing complex Indian court cases.</li> <li>• Transformer Advantage: Transformer-based models like BART, Longformer, and Legal Pegasus significantly outperformed traditional methods (Luhn, LSA, LexRank, TextRank) due to their ability to handle lengthy and unstructured texts.</li> <li>• Domain Specificity Matters: The superior performance of Legal Pegasus confirms that field-specific models trained on relevant legal datasets provide better summarization results than general-purpose models.</li> </ul>
8.	<p>A Clause Recommendation Framework for AI-aided Contract Authoring</p>	<p>Vinay Aggarwal, Aparna Garimella.</p>	<p>Proceedings of the Conference on Empirical Methods in Natural Language Processing (EMNLP). October 26, 2021</p>	<p>Writing legal contracts is a difficult and time-consuming process. This work introduces ClauseREC, an AI-powered system designed to streamline and accelerate contract construction.</p> <p>The concept is simple: Instead of manual typing, ClauseREC acts as a summarizing "AI legal assistant" by:</p> <ol style="list-style-type: none"> <li>1. Predicting the next required clause type based on the agreement's context.</li> <li>2. Retrieving suitable, relevant sample clauses from a vast repository of legal files.</li> </ol> <p>This system saves lawyers significant time, ensures consistency across documents, and reduces the risk of missing critical legal terms.</p>

# Applications:

- **Legal Document Simplification:**

Translates complex legal jargon into plain language summaries that are easy to understand.

- **Key Clause Extraction & Explanation:**

Automatically identifies important clauses (e.g., termination, confidentiality) and explains their meaning in simple terms.

- **Risk Identification:**

Flags potentially unfavorable or risky clauses to help users avoid hidden pitfalls.

- **Contract Summarization:**

Generates concise summaries to reduce reading time and enhance comprehension.

- **Pre-Legal Consultation Aid:**

Helps users understand contracts before seeking professional legal advice, saving time and cost.

- **Educational Tool:**

Assists individuals and students in learning about legal document structure and terminology.

- **Accessibility Enhancement:**

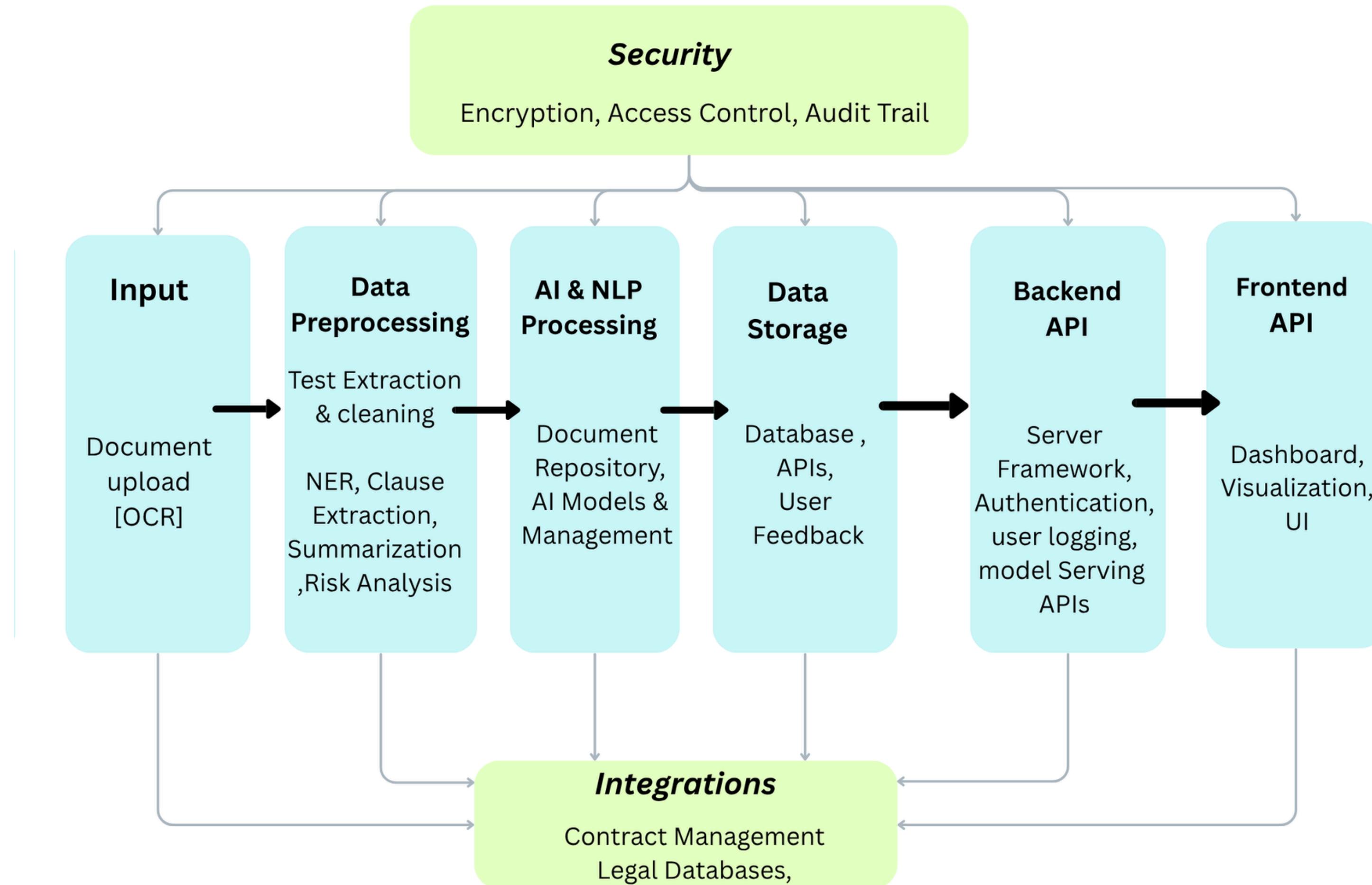
Supports users with low legal literacy, language barriers, or disabilities in understanding legal documents.



# Software Requirements

Category	Tools / Technologies	Purpose
Operating System	Windows	Development environment
STORAGE / INTEGRATION	AWS CLOUDFRONT / AWS S3 BUCKET	To store the database and help in integration with IDE
Programming Language	Python , JavaScript, CSS,	Core development language for AI/NLP
Machine Learning / NLP Libraries	HuggingFace Transformers, spaCy, NLTK, Scikit-learn, PyTorch, TensorFlow, Github, Kaggle,	Model building, text processing, and training
Web Frameworks	Flask, FastAPI (optional)	For building user interface/API
Database	SQLite, PostgreSQL ,Mongo DB	Store user data or document metadata

# ARCHITECHTURE DIAGRAM





# References List

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- <https://arxiv.org/html/2404.12349v1>
- <https://jet-m.com/wp-content/uploads/48-JETM8091.pdf>
- [https://www.researchgate.net/profile/Vimala-Imogen/publication/381099261\\_AI-Powered\\_Legal\\_Documentation\\_Assistant/links/668e380cb15ba559074d9b00/AI-Powered-Legal-Documentation-Assistant.pdf](https://www.researchgate.net/profile/Vimala-Imogen/publication/381099261_AI-Powered_Legal_Documentation_Assistant/links/668e380cb15ba559074d9b00/AI-Powered-Legal-Documentation-Assistant.pdf)

**Thank You!!  
Any questions.**