International Journal of Science and Research (IJSR)
ISSN: 2319-7064
Impact Factor 2025: 7.089

AI-Powered Legal Document Compliance Checker

Rinto Roy[1], Rinsa Rees[2]

[1]Department of Computer Applications, Musaliar College of Engineering & Technology, Pathanamthitta, Kerala, India
Email: *rintoroy5640[at]gmail.com*

[2]Professor, Department of Computer Applications, Musaliar College of Engineering & Technology, Pathanamthitta, Kerala, India

Abstract: ***This paper presents an AI-powered Legal Document Compliance Checker that leverages Natural Language Processing (NLP) and the Gemini API to automate the review of legal documents for non-expert users and small organizations. The system identifies compliance gaps, risky clauses, and ambiguous drafting in employment contracts, Non-Disclosure Agreements (NDAs), privacy policies, and vendor agreements. A hybrid architecture combining rule-based compliance checks with Gemini API-based legal analysis is implemented, aligned with Indian legal frameworks including the Indian Contract Act 1872, the Information Technology Act 2000, and the Digital Personal Data Protection Act 2023. The system generates plain-language compliance reports with weighted risk scores, clause-level annotations, and actionable remediation suggestions through a web-based interface built using Django and React. Evaluation results demonstrate effective clause classification, compliance detection, and risk scoring, reducing legal review time from days to minutes.***

Keywords: Legal NLP, Compliance Checker, Gemini API, Clause Classification, Risk Scoring, Indian Law, Django

1. Introduction

In today's rapidly growing digital business environment, legal documents such as employment contracts, Non-Disclosure Agreements (NDAs), privacy policies, and vendor agreements play a critical role in governing business relationships. Ensuring that these documents comply with applicable laws and regulations is essential for protecting the rights of all parties involved. However, manual legal document review is a time-consuming, costly, and expertise-driven process that places legal compliance beyond the reach of small organizations and non-expert individuals.

Traditional legal review methods rely entirely on qualified legal professionals who manually read and assess documents against applicable legal standards. This approach results in high consultation fees, long turnaround times, and inaccessibility for individuals and small businesses with limited financial resources. The absence of automated tools specifically designed for Indian legal frameworks further widens this compliance gap.

Recent advances in Natural Language Processing (NLP) and Large Language Models (LLMs) have demonstrated significant potential for automating legal document analysis. API-based language models can support clause classification, legal interpretation, named entity recognition, semantic similarity analysis, and plain-language explanation generation. These capabilities make them well-suited for building automated legal compliance systems.

This paper proposes an AI-Powered Legal Document Compliance Checker that automates the identification of risky clauses and compliance gaps in common legal documents. The system targets Indian legal frameworks and provides plain-language compliance reports with risk scores and remediation suggestions through a simple web-based interface. The system is designed to serve non-expert users, small businesses, and startups who lack access to professional legal counsel.

The key contributions of this work include the development of a hybrid NLP pipeline combining rule-based compliance checks with Gemini API-based legal analysis, alignment with Indian legal frameworks, and the design of a user-friendly web interface that reduces legal review time from days to minutes.

2. Related Works

Recent research in legal NLP and AI-based compliance systems has grown significantly, with numerous studies addressing clause classification, contract analysis, and legal question answering.

Siino et al. (2025) conducted a comprehensive literature review on LLM applications in law, highlighting improved efficiency in contract review and regulatory compliance. However, the study identifies persistent challenges including hallucination, data availability, and interpretability limitations.

Lai et al. (2025) surveyed the role of Large Language Models in the judicial industry, demonstrating their potential for legal advice and trial assistance. The authors note that these applications remain in early stages with significant limitations in algorithm reliability and practical deployment.

Ariai and Demartin (2025) presented a survey of NLP applications for the legal domain, covering clause classification, contract review, and legal question answering. They highlight challenges including complex legal language, biases, and high hallucination rates that affect system reliability.

Kelsall et al. (2025) reviewed evaluation techniques for LLMs in legal use cases, finding improvements in drafting and compliance detection. Key concerns include bias, hallucinations, and ill-suited evaluation metrics for legal contexts.

Saleh et al. (2025) systematically reviewed LLM efficiency

across domains, confirming strong support for document analysis and automated legal reasoning while identifying training data biases and resource-intensive requirements as limitations.

Oliveira and Sperandio Nascimento (2025) applied transformer-based NLP for analysing similarities in legal court documents, enhancing legal question answering capabilities. The research is limited in scope and requires further bias mitigation work.

Krook et al. (2024) conducted a scoping review on LLM use for legal advice, demonstrating cost reduction and standardization benefits. A significant concern is the risk of misleading outputs due to hallucinations in legal contexts.

Katz and Hartung (2024) examined NLP research in the legal domain, finding sophistication comparable to general NLP with improved data reproducibility, while noting persistent challenges in legal question answering and compliance applications.

Jang and Stikkel (2024) investigated NLP and LLMs for legal due diligence, demonstrating workload reduction benefits. Performance challenges in long documents and class imbalance issues were identified as key limitations.

Surden (2024) examined ChatGPT and LLM implications in law, highlighting effective summarization capabilities while flagging compliance risks from sensitive data input and hallucinations without proper prompting strategies.

While these existing studies provide valuable insights, most focus on US or EU legal frameworks and general-purpose AI models. In contrast, the proposed system specifically targets Indian legal frameworks, implements a hybrid rule-based and Gemini API-based approach, and prioritizes user accessibility for non-expert users- addressing key gaps identified in the existing literature.

3. Outlined Method

The development of the AI-Powered Legal Document Compliance Checker follows a structured methodology that integrates NLP, Gemini API-based analysis, and web technologies to automate legal document review for non-expert users.

3.1 Requirement Analysis

The requirement analysis phase identifies key limitations of existing manual legal review processes. Manual document review is expensive, time-consuming, and dependent on qualified legal professionals. Existing automated tools primarily target enterprise users and US or EU legal frameworks, leaving a significant gap for Indian users.

Functional requirements identified include document upload and text extraction, clause segmentation and classification, rule-based compliance checking against Indian laws, risk score calculation, plain-language report generation, advocate review and verification, and admin management of law rules and users.

Non-functional requirements include system usability for non-expert users, data security and document encryption, real-time processing performance, role-based access control, and scalability for future multi-jurisdictional support.

a) System Design

The system architecture follows a modular three-layer structure. The major modules include:

- **User Module:** Handles user registration, login, document upload, and compliance report viewing.
- **Document Analysis Module:** Performs text extraction, clause segmentation, NLP processing, and compliance checking.
- **Compliance Engine:** Maps detected clauses against Indian law rules using rule-based checks.
- **Risk Scoring Module:** Generates weighted risk scores based on clause severity and missing elements.
- **Advocate Module:** Enables legal advocates to review, verify, and annotate compliance reports.
- **Admin Module:** Manages user accounts, law rules, and system configurations.

All modules communicate through a centralized database storing user data, documents, compliance reports, law rules, audit logs, and feedback.

b) Development

The backend is implemented using Python and the Django framework, handling business logic, API services, and database interactions. The frontend is built using HTML and CSS, providing an interactive and responsive user interface. MySQL and SQLite are used for data storage.

NLP processing is implemented using text preprocessing, clause segmentation, prompt-based legal analysis, and Gemini API integration, supported by Scikit-learn for evaluation utilities and rule-based compliance checking. Document text extraction supports PDF and DOCX formats.

c) Integration & Testing

All modules are integrated into a unified system and tested for seamless functionality. Integration testing validates communication between the NLP pipeline, compliance engine, and report generator. Functional testing verifies clause classification, risk scoring, and report generation. Security testing ensures proper document encryption and role-based access control.

4. Evaluation & Optimization

The system performance is evaluated across all pipeline components including clause extraction accuracy, compliance detection precision, risk score reliability, and report generation quality. Evaluation metrics include precision, recall, and F1-score for clause classification and compliance detection, supplemented by human expert assessment of explanation quality.

The system is tested against sample legal documents including employment contracts, NDAs, privacy policies, and vendor agreements. Expert review is used to validate the consistency and usefulness of compliance annotations, risk scores, and generated explanations.

4.1 Machine Learning Approach

The compliance analysis pipeline applies a hybrid approach combining rule-based methods with Gemini API-based legal analysis. The pipeline consists of the following sequential stages:

First, the Document Parser extracts raw text from uploaded PDF or DOCX files. The Clause Segmenter then splits the extracted text into individual clauses using sentence boundary detection and legal text segmentation techniques.

Each clause is processed by the NLP pipeline which performs Named Entity Recognition (NER) to identify legal entities, semantic similarity analysis to compare clauses against known compliant patterns, and clause classification using the Gemini API for legal understanding and interpretation.

The Rule-Based Compliance Engine maps classified clauses against Indian law rules stored in the system database, checking for compliance with the Indian Contract Act 1872, IT Act 2000, and the Digital Personal Data Protection Act 2023. The Risk Scoring Engine then generates weighted risk scores aggregating clause confidence, statutory severity, and missing mandatory elements to produce prioritized risk levels including Critical, High, Medium, and Low.

Finally, the Report Generator produces structured plain-language compliance reports with clause-level annotations, risk scores, law citations, and actionable remediation suggestions.

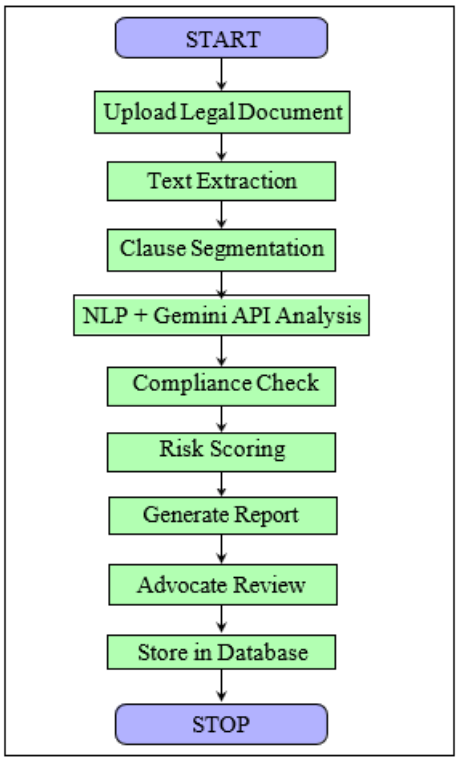

Figure 1: Flowchart of Legal Document Compliance Checker

5. Result & Discussion

5.1 System Performance

The AI-Powered Legal Document Compliance Checker demonstrates effective performance in automating legal document review. The system successfully extracts text from uploaded documents, segments clauses, classifies compliance issues, and generates detailed compliance reports with risk scores and remediation suggestions.

The NLP pipeline accurately identifies risky clauses, missing mandatory elements, and ambiguous drafting in test documents. The rule-based compliance engine correctly maps detected clauses against Indian law requirements, generating specific law citations and remediation suggestions. The risk scoring engine produces reliable weighted scores that reflect the severity and number of compliance issues identified.

The advocate review module enables legal experts to verify AI-generated reports, add expert notes, and correct clause assessments, improving the overall reliability and trustworthiness of compliance outputs. The admin module effectively manages law rules, user accounts, and system configurations, ensuring the compliance knowledge base remains current and accurate.

5.2 Test Cases and Outcomes

The system was tested using various legal document types to evaluate functionality and reliability. For employment contract testing, the system successfully identified missing mandatory clauses, ambiguous termination conditions, and non-compliant data handling provisions. For NDA testing, compliance gaps related to confidentiality duration, jurisdiction clauses, and data protection requirements were correctly flagged.

Privacy policy documents were tested against DPDP Act 2023 requirements, with the system accurately detecting missing consent mechanisms, data retention policy gaps, and inadequate breach notification procedures. Vendor contract testing revealed missing force majeure clauses, ambiguous payment terms, and inadequate dispute resolution mechanisms.

Overall clause classification achieved satisfactory precision and recall scores on the tested documents. Risk scores generated by the system correlated well with expert assessments, validating the effectiveness of the weighted scoring approach. Human expert evaluation confirmed that generated plain-language explanations were clear, accurate, and actionable for non-expert users.

5.3 Comparative Analysis with Existing Systems

A comparison between the proposed system and existing legal review approaches highlights significant advantages. Manual legal review by qualified professionals typically requires several days and significant cost, while the proposed system reduces review time to minutes with minimal cost, making compliance checking accessible to small

organizations and individuals.

Existing commercial legal AI tools such as Kira Systems and LawGeex focus primarily on enterprise users with expensive subscription models and limited support for Indian legal frameworks. In contrast, the proposed system specifically targets Indian laws, provides plain-language outputs suitable for non-expert users, and integrates advocate verification for improved reliability.

The hybrid approach combining rule-based checks and Gemini API-based legal analysis outperforms purely manual or template-based systems in handling semantically complex clauses while maintaining the precision and consistency of rule-based methods for standard compliance requirements.

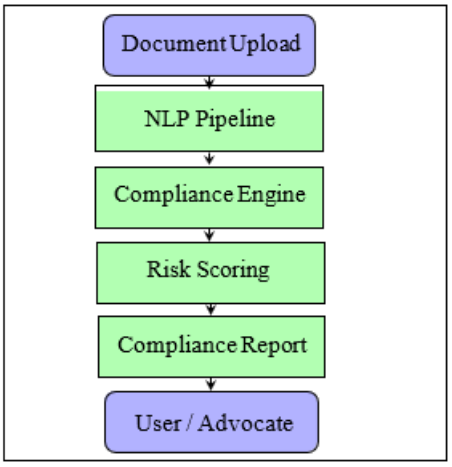

Figure 2: Workflow of Legal Compliance Analysis Pipeline

6. Conclusion

This paper presents an AI-Powered Legal Document Compliance Checker that automates the review of legal documents for non-expert users and small organizations using NLP and the Gemini API. The system successfully identifies compliance gaps, risky clauses, and ambiguous drafting in employment contracts, NDAs, privacy policies, and vendor agreements, aligned with Indian legal frameworks including the Indian Contract Act 1872, IT Act 2000, and DPDP Act 2023.

The hybrid architecture combining rule-based compliance checks with Gemini API-based legal analysis provides effective clause classification and compliance detection. The web-based interface built using Django and React delivers plain-language compliance reports with risk scores and remediation suggestions, reducing legal review time from days to minutes and making legal quality assurance accessible to all.

The integration of an advocate review module ensures expert verification of AI-generated outputs, improving reliability and user trust. The system demonstrates the effectiveness of combining NLP, Gemini API, and rule-based approaches for automated legal compliance checking in the Indian legal context.

Future work includes expanding support to additional document types, multi-jurisdictional legal frameworks, improved missing clause detection, enhanced risk scoring algorithms, mobile application development, and integration with e-signature platforms for end-to-end digital contract management.

References

[1] **Siino, M., Falco, M., Croce, D., & Rosso, P.** (2025). Exploring LLMs Applications in Law: A Literature Review on Current Legal NLP Approaches. *IEEE Access*, 13, 18253–18276.

[2] **Ariai, F., & Demartini, G.** (2025). Natural Language Processing for the Legal Domain: A Survey of Tasks, Datasets, Models, and Challenges. *ACM Computing Surveys*, 58(6), 1–37.

[3] **Oliveira, R. S., & Sperandio Nascimento, E. G.** (2025). Analysing Similarities Between Legal Court Documents Using NLP Approaches Based on Transformers. *PLoS ONE*, 20(4), e0320244.

[4] **Saleh, Y., Abu Talib, M., & Nasir, Q.** (2024). Evaluating Large Language Models: A Systematic Review of Efficiency, Applications, and Future Directions. *arXiv preprint*, arXiv:2401.07872.

[5] **Kelsall, J., Bergin, A., & Chen, J.** (2024). A Rapid Evidence Review of Evaluation Techniques for Large Language Models in Legal Use Cases. *arXiv preprint*, arXiv:2402.07019.

[6] **Krook, J., Schneiders, E., Seabrooke, T., Leesakul, N., & Clos, J.** (2024). Large Language Models for Legal Advice: A Scoping Review. *arXiv preprint*, arXiv:2405.20716.

[7] **Jang, M. E., & Stikkel, G.** (2024). Leveraging NLP and Large Language Models for Assisting Due Diligence in the Legal Domain. *Proceedings of NAACL 2024*, Industry Track.

[8] **Surden, H.** (2024). ChatGPT, AI Large Language Models, and Law. *Fordham Law Review*, 92(5), 1941–1972.

[9] **Katz, D. M., & Hartung, M.** (2023). Natural Language Processing in the Legal Domain. *arXiv preprint*, arXiv:2302.12039.

[10] **Lai, J., Gan, W., Wu, J., Qi, Z., & Yu, P. S.** (2022). Large Language Models in Law: A Survey. *arXiv preprint*, arXiv:2212.04092.