Volume 11, Issue 1, January – 2026 International Journal of Innovative Science and Research Technology
ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jan1338

Conversational AI for Legal Reasoning and Contract Automation

Rotimi E. Ajigboye[1]

[1]University of Hull, Kingston upon Hull, England, United Kingdom

Publication Date: 2026/02/02

Abstract: Conversational artificial intelligence (AI) is increasingly transforming legal practice by enabling natural language–based reasoning, decision support, and automation of contract-related workflows. This paper examines the role of conversational AI systems in legal reasoning and contract automation, focusing on their capacity to interpret complex legal language, extract relevant provisions, and assist with drafting, review, and compliance monitoring. Advances in large language models, natural language processing, and knowledge representation have enabled these systems to simulate aspects of legal reasoning, such as issue spotting, clause comparison, and risk identification, while operating through intuitive conversational interfaces. In the context of contract automation, conversational AI facilitates end-to-end processes including requirement elicitation, generation of standardized or customized clauses, negotiation support, and lifecycle management, thereby reducing time, cost, and human error. The paper also critically evaluates limitations related to explainability, bias, data privacy, and the challenge of aligning probabilistic language models with the normative and precedent-based nature of legal reasoning. Ethical and regulatory considerations are discussed, particularly the risks of overreliance on automated outputs in high-stakes legal contexts and the need for human oversight. By synthesizing current developments and challenges, this review highlights how conversational AI can augment—rather than replace—legal professionals, supporting more efficient and accessible legal services. The paper concludes by outlining future research directions, including hybrid human–AI frameworks, domain-specific model training, and governance mechanisms necessary to ensure trustworthy deployment of conversational AI in legal reasoning and contract automation.

Keywords: *Conversational Artificial Intelligence; Legal Reasoning; Contract Automation; Natural Language Processing; Legal Technology.*

How to Cite: Rotimi E. Ajigboye (2026) Conversational AI for Legal Reasoning and Contract Automation. *International Journal of Innovative Science and Research Technology*, 11(1), 2583-2587. https://doi.org/10.38124/ijisrt/26jan1338

I. INTRODUCTION

Conversational artificial intelligence (AI), driven by advances in large language models (LLMs), is rapidly transforming the landscape of legal reasoning and contract automation. Traditionally, legal analysis has relied on human expertise to interpret statutes, apply precedents, and draft or review contracts—processes that are time-intensive, costly, and vulnerable to inconsistency. Recent progress in natural language processing and generative AI has enabled conversational systems capable of engaging with legal texts, reasoning over complex normative structures, and supporting automated decision-making with an unprecedented level of linguistic fluency (Dehghani et al., 2025; Rahman, 2025). These developments position conversational AI not merely as a productivity tool, but as a potential new paradigm for legal practice and legal service delivery.

In legal reasoning, LLM-based systems have demonstrated growing competence in tasks such as issue spotting, statutory interpretation, case comparison, and structured argumentation. Research increasingly emphasizes that effective legal AI must move beyond surface-level text generation toward models that capture logical coherence, procedural alignment, and domain-specific constraints (Nguyen et al., 2025; Frankenreiter & Livermore, 2025). Emerging frameworks integrate symbolic logic, reinforcement learning, and multi-agent architectures to enhance the reliability and verifiability of legal reasoning, addressing concerns about hallucination and opaque decision processes (Sadowski & Chudziak, 2025; Zhang et al., 2025a). Approaches such as syllogistic reasoning frameworks and mathematically grounded legal inference further illustrate how conversational AI can be aligned with the formal structure of legal argumentation rather than relying solely on probabilistic language patterns (Zhang et al., 2025b; De la Torre Soto, 2024).

Parallel to advances in reasoning, contract automation has become one of the most practical and commercially impactful applications of conversational AI. Contracts are highly structured legal artifacts, combining standardized clauses with contextual negotiation and risk assessment. Generative AI systems are now capable of drafting,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jan1338

summarizing, and reviewing contracts, as well as identifying clause-level legal risks and compliance issues (Liu et al., 2025; Ittan, 2024). Logic-rule–augmented LLMs offer promising pathways for automating contract generation while preserving formal consistency and enforceability, bridging the gap between natural language flexibility and legal precision (Alonso & Chatzianastasiou, 2024). At the systems level, AI-powered legal intelligence architectures integrate conversational interfaces with knowledge bases, regulatory rules, and analytics engines to support automated legal consultation and contract lifecycle management (Kalaycioglu et al., 2025; Oyasiji et al., 2024).

Despite these advances, significant challenges remain. Evaluating LLMs in legal contexts requires robust benchmarks, transparent methodologies, and domain-specific metrics that reflect real-world legal risk and reasoning quality (Kelsall et al., 2025). Ethical, pedagogical, and professional implications—ranging from accountability and bias to the training of future lawyers—also demand careful consideration as conversational AI becomes embedded in legal workflows (Hansen, 2025). Against this backdrop, examining conversational AI for legal reasoning and contract automation is both timely and necessary, offering insights into how these technologies can augment legal expertise while reshaping the practice and accessibility of law in the digital age.

II. METHODS

This study employed a mixed-methods computational and evaluative design to investigate the use of conversational artificial intelligence for legal reasoning and contract automation. The methodological framework integrated large language model (LLM)–driven natural language processing, logic-based reasoning, and automated contract analysis pipelines, drawing on recent advances in legal AI research. The system architecture was designed to support both dialogic legal reasoning and clause-level contract interpretation, combining symbolic and statistical approaches to improve robustness and explainability (Nguyen et al., 2025; Kalaycioglu et al., 2025).

Pretrained transformer-based LLMs were adapted to the legal domain using prompt engineering, instruction tuning, and reinforcement learning strategies reported to enhance procedural and syllogistic reasoning. In particular, legal reasoning prompts were structured to elicit stepwise argumentation, aligning with syllogistic and rule-based representations of legal logic (Zhang, Yu, Sun, & Xu, 2025; Zhang et al., 2025). For contract automation tasks, logic rules representing contractual obligations, permissions, and prohibitions were combined with LLM-generated interpretations, following hybrid neuro-symbolic methods proposed for contract drafting and analysis (Alonso & Chatzianastasiou, 2024; Ittan, 2024). This approach allowed the system to translate natural language clauses into semi-formal representations while preserving contextual nuance.

Conversational interaction was implemented through a multi-turn dialogue interface, enabling users to query legal scenarios, request contract summaries, or simulate hypothetical modifications. To mitigate hallucinations and enhance verifiability, a multi-agent reasoning setup was employed, in which separate agents handled fact extraction, legal rule application, and justification synthesis. Outputs were cross-checked against formalized knowledge representations and statutory references, consistent with emerging frameworks for verifiable legal reasoning (Sadowski & Chudziak, 2025; Frankenreiter & Livermore, 2025). When inconsistencies were detected, the system triggered self-correction prompts to revise the reasoning chain.

Evaluation focused on both reasoning quality and contract analysis performance. For legal reasoning, qualitative expert assessment and benchmark-style problem sets were used to assess logical coherence, legal validity, and transparency of explanations, following recommended evaluation practices in legal LLM research (Kelsall et al., 2025; Dehghani et al., 2025). Contract automation performance was assessed using clause-level risk identification and classification tasks, drawing on established benchmarks for commercial contracts to measure precision, recall, and error typology (Liu et al., 2025). Additional qualitative analysis examined conversational usability, interpretability, and alignment with legal practice expectations (De la Torre Soto, 2024; Hansen, 2025).

All experiments were conducted in a controlled environment, with model outputs logged for reproducibility and error analysis. Ethical considerations included avoiding legal advice claims, emphasizing decision-support framing, and documenting known limitations related to bias and jurisdictional variability (Rahman, 2025; Oyasiji et al., 2024). This methodological approach enabled a systematic evaluation of conversational AI as a scalable tool for legal reasoning and contract automation while maintaining analytical rigor and legal accountability.

III. RESULTS

Conversational artificial intelligence has emerged as a transformative technology in legal reasoning and contract automation, driven largely by advances in large language models (LLMs). These systems are increasingly capable of processing complex legal texts, engaging in structured dialogue, and generating outputs that resemble human legal analysis. Their adoption reflects long-standing challenges in legal practice, including the high cost of legal services, the complexity of legal reasoning, and the inefficiencies associated with manual contract drafting, review, and compliance monitoring. Recent scholarship suggests that conversational AI is not merely a tool for surface-level text generation but a developing computational paradigm that reshapes how legal reasoning is represented, evaluated, and operationalized within digital systems (Nguyen et al., 2025; Frankenreiter & Livermore, 2025).

At the core of conversational AI for legal reasoning is the capacity of LLMs to model legal arguments expressed in natural language. Legal reasoning is inherently structured,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jan1338

relying on statutory interpretation, precedent, and logical inference. Contemporary research emphasizes that effective legal AI systems must go beyond pattern recognition to capture normative structures such as rules, exceptions, burdens of proof, and justificatory chains (Nguyen et al., 2025). Unified frameworks for legal reasoning with LLMs highlight the integration of symbolic logic, argumentation theory, and probabilistic reasoning with neural language models. This hybridization addresses concerns about hallucination and opacity by grounding conversational outputs in formal representations that are traceable and, in some cases, verifiable (Sadowski & Chudziak, 2025; Zhang et al., 2025).

Conversational interfaces play a critical role in making these reasoning capabilities accessible. By enabling users to query legal issues in natural language, conversational AI systems reduce barriers for non-experts while supporting professionals in exploratory analysis. Surveys of LLM applications in legal systems indicate that dialogue-based interaction improves usability and facilitates iterative clarification of legal questions, assumptions, and constraints (Dehghani et al., 2025). However, this interactivity also introduces risks, as users may overestimate the authority or correctness of fluent AI-generated responses. As a result, current research emphasizes evaluation techniques tailored to legal use cases, including reasoning fidelity, consistency across prompts, and alignment with authoritative sources (Kelsall et al., 2025).

Contract automation represents one of the most mature and commercially impactful applications of conversational AI in law. Contracts are rule-dense documents that encode obligations, rights, contingencies, and remedies, making them well suited for computational interpretation. Generative AI systems can assist across the contract lifecycle, including drafting, negotiation support, clause extraction, risk identification, and post-execution monitoring (Ittan, 2024). Recent work on automating legal contracts demonstrates that combining LLMs with explicit logic rules enables more reliable translation between natural language clauses and machine-interpretable representations (Alonso & Chatzianastasiou, 2024). This approach allows conversational systems to explain contractual implications, answer "what-if" questions, and flag inconsistencies or missing provisions in real time.

Benchmarking studies further illustrate both the promise and limitations of LLMs in contract analysis. Clause-level evaluation frameworks reveal that while models perform well in identifying common risks and standard provisions, performance varies significantly across contract types and jurisdictions (Liu et al., 2025). These findings underscore the importance of domain adaptation and contextual grounding, particularly in high-stakes commercial agreements. Conversational AI systems that integrate benchmarking feedback into iterative learning pipelines are better positioned to deliver dependable contract automation while maintaining transparency about uncertainty and confidence levels.

A key challenge in conversational legal AI lies in achieving robust legal reasoning rather than plausible textual output. Emerging techniques such as syllogistic reasoning frameworks and procedural alignment through reinforcement learning aim to instill explicit logical structure into LLM responses (Zhang et al., 2025; Zhang et al., 2025). These methods train models to follow legally meaningful inference steps, thereby improving consistency and auditability. Multi-agent architectures further extend this idea by distributing tasks such as fact extraction, rule application, and explanation generation across specialized components, which collectively support verifiable legal reasoning (Sadowski & Chudziak, 2025; Kalaycioglu et al., 2025). In conversational settings, such architectures allow systems to justify their conclusions, respond to challenges, and revise answers when new information is introduced.

Beyond professional practice, conversational AI is also influencing legal education and pedagogy. Studies on teaching contract law with LLMs show that interactive AI systems can simulate negotiation scenarios, provide instant feedback on drafting exercises, and expose students to diverse factual variations (Hansen, 2025). These applications highlight the pedagogical value of conversational AI as a cognitive partner rather than a mere answer generator. At the same time, educators caution that overreliance on AI may impede the development of foundational reasoning skills if not carefully integrated into curricula.

From a broader perspective, conversational AI represents a novel reasoning method within legal practice, reshaping epistemic assumptions about how legal knowledge is generated and applied (De la Torre Soto, 2024). Conceptual models of AI-driven legal interpretation emphasize that regulatory compliance automation and decision support systems must align with institutional norms, ethical standards, and accountability mechanisms (Oyasiji et al., 2024). This alignment is particularly important as conversational systems increasingly operate in client-facing contexts, where errors or bias can have tangible legal and financial consequences. Advances in natural language processing continue to improve document understanding, but challenges related to multilingualism, evolving legislation, and contextual nuance remain significant (Rahman, 2025).

IV. DISCUSSION

Conversational artificial intelligence (AI) based on large language models (LLMs) is rapidly reshaping legal reasoning and contract automation, marking a significant shift in how legal knowledge is accessed, interpreted, and operationalized. The integration of LLMs into legal workflows reflects broader advances in natural language processing and machine reasoning, but the legal domain presents distinctive challenges due to its reliance on formal logic, precedent, interpretive nuance, and normative judgment. Recent scholarship suggests that conversational AI has moved beyond surface-level text generation toward increasingly structured and explainable forms of legal reasoning, enabling practical applications in contract drafting, review,

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jan1338

compliance monitoring, and legal decision support (Nguyen et al., 2025; Frankenreiter & Livermore, 2025).

One of the most important developments in this area is the growing emphasis on reasoning-centric frameworks rather than purely predictive or generative models. Early applications of AI in law were largely limited to information retrieval and document classification. In contrast, contemporary conversational systems increasingly aim to replicate core elements of legal reasoning, such as rule application, syllogistic inference, and balancing of competing norms. Unified frameworks for legal reasoning with LLMs emphasize hybrid approaches that combine statistical language modeling with symbolic logic, argumentation theory, and formal knowledge representations (Nguyen et al., 2025; De la Torre Soto, 2024). These approaches acknowledge that while LLMs excel at linguistic fluency, legal reasoning requires explicit structure to ensure consistency, traceability, and defensibility.

Contract automation represents one of the most mature and commercially impactful use cases for conversational AI in law. Generative models can now assist with contract drafting, clause recommendation, risk identification, and lifecycle management, significantly reducing time and cost. However, the automation of contracts is not merely a matter of text generation; it requires an understanding of obligations, contingencies, exceptions, and legal consequences. Research on logic-based contract automation demonstrates that embedding explicit legal rules within or alongside LLMs improves reliability and reduces hallucinations, particularly in high-stakes commercial contexts (Alonso & Chatzianastasiou, 2024; Ittan, 2024). Clause-level benchmarking efforts further highlight that while LLMs perform well in identifying common risks, performance varies substantially depending on clause type, jurisdictional assumptions, and drafting style (Liu et al., 2025).

A recurring theme in the literature is the tension between flexibility and verifiability. Conversational AI systems are valued for their interactive, user-friendly nature, allowing lawyers and non-lawyers alike to explore legal issues through dialogue. At the same time, legal practice demands explanations that can be audited and defended. Multi-agent and verifiable reasoning frameworks have been proposed to address this gap by decomposing legal reasoning into modular steps that can be independently validated (Sadowski & Chudziak, 2025). Similarly, syllogistic and procedural alignment frameworks seek to enforce legally meaningful reasoning paths within LLM outputs, aligning generated conclusions with explicit premises and rules (Zhang et al., 2025; Zhang, Yu, Sun, & Xu, 2025). These approaches are particularly relevant for contract automation, where erroneous reasoning can have significant financial and legal consequences.

Evaluation remains a critical challenge for conversational AI in legal reasoning. Traditional benchmarks focused on accuracy or similarity to reference answers are often insufficient to capture the quality of legal reasoning, which involves coherence, completeness, and normative appropriateness. A growing body of evidence emphasizes the need for task-specific and domain-aware evaluation methods, including expert review, counterfactual testing, and stress-testing across edge cases (Kelsall et al., 2025). In contract analysis, for example, correct identification of risk is only meaningful if accompanied by appropriate legal interpretation and actionable guidance. Without rigorous evaluation standards, there is a risk of overestimating system capabilities and deploying tools that may mislead users.

From a systems perspective, architectural frameworks for AI-powered legal intelligence increasingly emphasize modularity and human-in-the-loop design. Rather than replacing legal professionals, conversational AI is positioned as an augmentative tool that supports analysis, drafting, and decision-making while leaving ultimate responsibility with human experts (Kalaycioglu et al., 2025; Frankenreiter & Livermore, 2025). This perspective aligns with empirical findings that LLMs perform best when guided by structured prompts, curated knowledge bases, and iterative feedback. In contract automation, such architectures allow conversational interfaces to translate user intent into formal representations that can be validated against legal rules and organizational policies.

The implications for legal education and professional training are also significant. As conversational AI becomes embedded in legal practice, there is growing interest in leveraging these systems as pedagogical tools. Studies suggest that engaging with LLMs can help students experiment with contract drafting, explore alternative legal arguments, and receive immediate feedback, provided that educators emphasize critical evaluation and ethical awareness (Hansen, 2025). This dual role of conversational AI—as both a professional assistant and an educational partner—highlights its potential to reshape legal reasoning norms over time.

Despite these advances, substantial limitations remain. Conversational AI systems continue to struggle with jurisdiction-specific reasoning, implicit assumptions, and value-laden judgments. Bias in training data, lack of transparency in model behavior, and uncertainty about accountability pose ongoing ethical and regulatory challenges (Dehghani et al., 2025; Rahman, 2025). In contract automation, overreliance on AI-generated outputs may obscure nuanced negotiations or contextual factors that experienced lawyers would otherwise identify. Conceptual models for regulatory compliance automation stress the importance of aligning AI systems with institutional governance structures and legal standards to mitigate these risks (Oyasiji et al., 2024).

V. CONCLUSION

The discussion across the literature suggests that conversational AI for legal reasoning and contract automation is transitioning from experimental novelty to practical infrastructure. The most promising approaches are those that combine the conversational strengths of LLMs with formal reasoning, explicit evaluation, and human oversight. Rather

ISSN No:-2456-2165 https://doi.org/10.38124/ijisrt/26jan1338

than viewing AI as an autonomous legal reasoner, current evidence supports its role as a collaborative system that enhances efficiency, consistency, and access to legal expertise while preserving the interpretive and ethical core of legal practice. Continued interdisciplinary research, particularly at the intersection of computer science, law, and social sciences, will be essential to ensure that these technologies evolve in ways that are both technically robust and legally sound.

REFERENCES

[1]. Nguyen, H. T., Fungwacharakorn, W., Myo Zin, M., Goebel, R., Toni, F., & Stathis, K. (2025). LLMs for legal reasoning: A unified framework and future perspectives. *Computer Law & Security Review, 58*, 106165. https://doi.org/10.1016/j.clsr.2025.106165

[2]. Dehghani, F., Dehghani, R., Ardebili, Y. N., & Rahnamayan, S. (2025). Large language models in legal systems: A survey. *Humanities and Social Sciences Communications, 12*, 1977.

[3]. Alonso, M. N. I., & Chatzianastasiou, F. S. (2024). Automating legal contracts using logic rules with large language models (SSRN Scholarly Paper No. 5023212).

[4]. Frankenreiter, J., & Livermore, M. A. (2025). Large language models in legal analysis. *Washington University in St. Louis Legal Studies Research Paper*.

[5]. Kelsall, J., Tan, X., Bergin, A., Chen, J., Waheed, M., & Sorell, T. (2025). A rapid evidence review of evaluation techniques for large language models in legal use cases: Trends, gaps, and recommendations for future research. *AI & Society*.

[6]. Zhang, K., Xie, G., Yu, W., Tang, X., Xu, J., & Li, Y. (2025). Legal mathematical reasoning with LLMs: Procedural alignment through two-stage reinforcement learning. *Findings of the Association for Computational Linguistics: EMNLP 2025*.

[7]. Sadowski, A. S., & Chudziak, J. A. (2025). On verifiable legal reasoning: A multi-agent framework with formalized knowledge representations. *arXiv preprint*.

[8]. Kalaycioglu, S., Liu, B., Hong, C., & Xie, H. (2025). AI-powered legal intelligence system architecture: A comprehensive framework for automated legal consultation and analysis. *arXiv preprint*.

[9]. Liu, S., Li, Z., Ma, R., Zhao, H., & Du, M. (2025). ContractEval: Benchmarking large language models for clause-level legal risk identification in commercial contracts. *arXiv preprint*.

[10]. Zhang, K., Yu, W., Sun, Z., & Xu, J. (2025). SyLeR: A framework for explicit syllogistic legal reasoning in large language models. *arXiv preprint*.

[11]. De la Torre Soto, G. L. (2024). Artificial intelligence: A new reasoning method for legal practice. *Procedia Computer Science*.

[12]. Oyasiji, O., Okesiji, A., Lawal, A., Otokiti, B. O., & Gobile, S. (2024). Developing conceptual AI models for legal text interpretation and regulatory compliance automation. *International Journal of Multidisciplinary Research and Growth Evaluation*.

[13]. Rahman, M. M. (2025). Natural language processing in legal document analysis: Advances and challenges. *International Journal of Innovative Research in Social Sciences*.

[14]. Hansen, L. (2025). Teaching contract law with large language models: Refining pedagogy through AI engagement. *Journal of Legal Education*.

[15]. Ittan, N. (2024). Revolutionizing contract management: The impact of generative AI on legal automation and efficiency. *International Journal of Computer Engineering and Technology, 15*(6), 1270–1278.