LawDigitalTwin: A Proactive and Emotionally Aware Digital Agent
FOR
Complex Commercial Disputes

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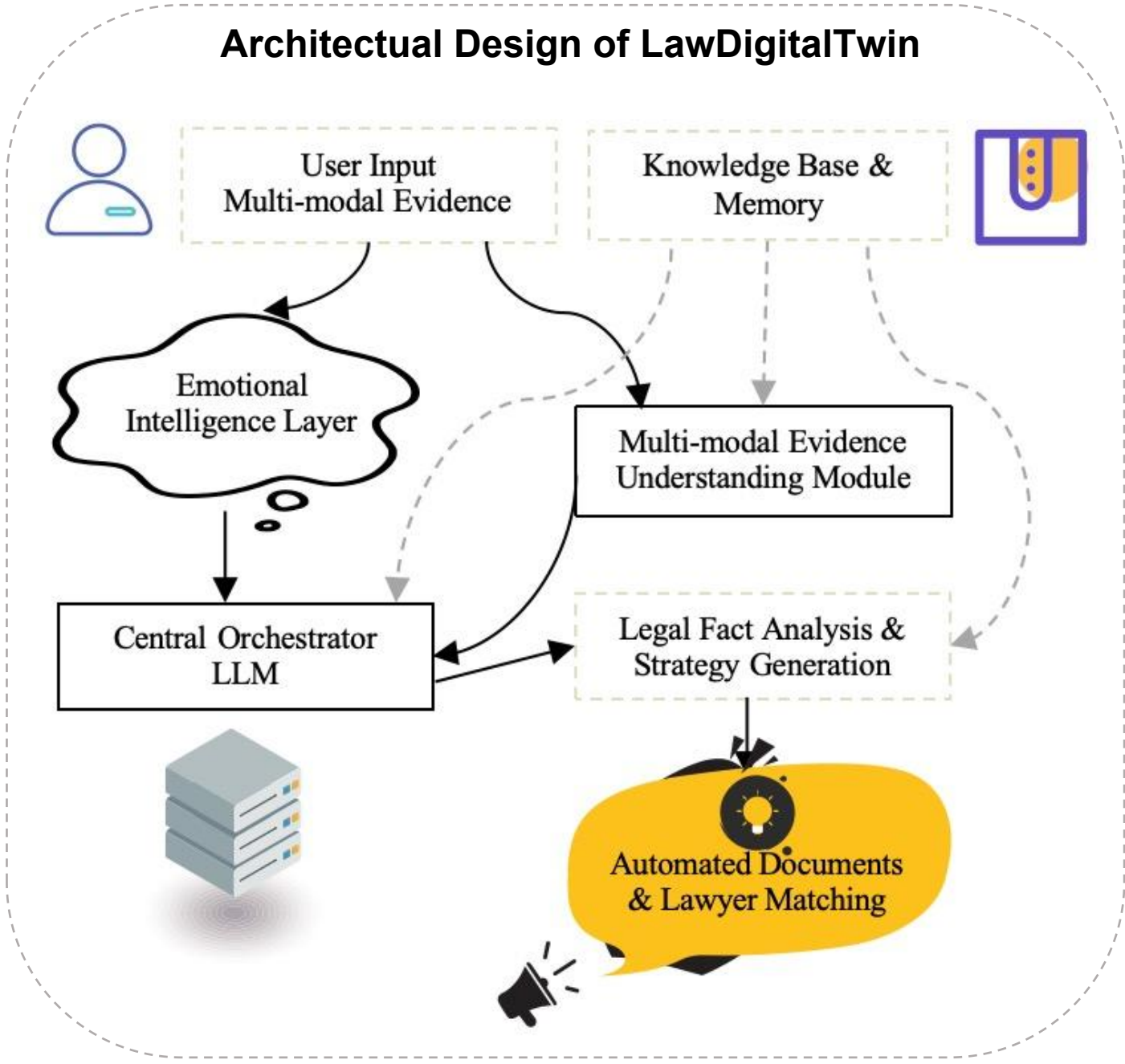JANUARY 20-27, 2026 | SINGAPORE

Introduction

The resolution of modern commercial disputes, particularly those involving intertwined issues like supply chains and financial factoring, poses significant challenges due to their complexity and tight coupling with business operations. We introduce LawDigitalTwin, a proactive and emotionally aware digital agent designed to navigate the entire lifecycle of complex commercial disputes. Unlike traditional legal solutions that focus solely on question-and-answer interactions, our system leverages Large Language Models (LLMs) to integrate a structured legal workflow, offering end-to-end support that encompasses evidence gathering, legal fact summarization, lawyer pairing, and strategic litigation planning. A key innovation of LawDigitalTwin is its ability to dynamically integrate emotional recognition into formal legal reasoning processes, which significantly enhances user trust and engagement. Through a case study of a multi-party dispute regarding a smart device supply chain contract, we demonstrate LawDigitalTwin's capability in deconstructing complexities, formulating effective strategies, and executing essential actions such as asset preservation. This demonstration underscores the potential of AI to transform and democratize access to high-stakes legal services.

Architectual Design of LawDigitalTwin

Core Modules:

➤ *Multi-Modal Evidence Analysis Module:* The system supports processing various types of evidence files, such as contracts, chat records, and audio recordings. It extracts key textual information through multimodal technology for subsequent analysis.

➤ *Structured Workflow Engine:* Serving as the core of the system, this engine follows a predefined yet flexible workflow. It guides the user to provide key information in a logical sequence, including the identities of the parties, the domain of the dispute, the case timeline, contractual clauses, evidence and the user's core demands.

➤ *Emotional Intelligence Interaction Layer:* This module identifies emotional cues in the user's input in real-time and adjusts the system's responses accordingly. It incorporates empathetic expressions before posing logical questions, thereby enhancing the user experience and willingness to provide information.

➤ *Legal Fact Summarization and Document Generation Module:* After collecting sufficient information, the system automatically generates a structured legal fact summary. This document clearly outlines the parties involved, legal relationships, timeline, key evidence, and loss calculations related to the case.

➤ *Intelligent Lawyer Matching Engine:* Considering the high potential of LLM in judgement prediction task, we choose LLM to complete lawyer mathing task. Based on a database of lawyer profiles, the system matches the specific needs of the case with factors such as the lawyers' areas of expertise, past successful cases, and geographical location. It provides a ranked list of recommendations with clear justifications.

Comparative Experiment Evaluation

LawDigitalTwin vs. General-purpose AI Assistants:

We designed a comparative experiment involving 15 participants with legal or business backgrounds (5 per group). After reviewing the same simulated commercial dispute case and multimodal evidence such as contract PDFs, chat record screenshots, and audio recordings, participants engaged in simulated dialogue interactions with LawDigitalTwin, DeepSeek, and Doubao. User ratings on five key dimensions (1-5 scale, 5 being optimal) were collected to evaluate the performance of each model in a realistic scenario.
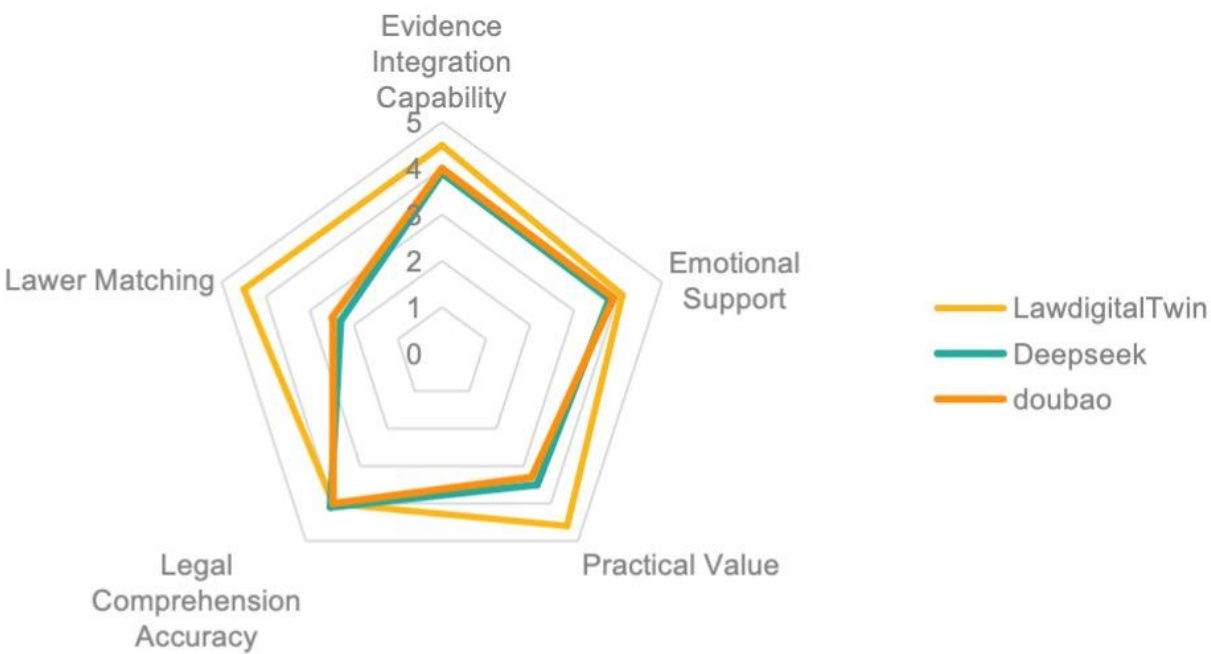
Evaluation Metrics:

✓ **Evidence Integration Capability:** Evaluates the system's ability to effectively process and comprehensively analyze various types of evidence materials you provide (such as contracts, chat records, audio recordings, etc.), accurately extract key information, and identify connections or contradictions between different pieces of evidence.

✓ **Emotional Support:** Evaluates whether the system can perceive your emotional state during the conversation and provide understanding and reassurance, making you feel supported during the interaction and thus more willing to cooperate with information provision.

✓ **Practical Value:** Evaluates whether the system can provide practical and usable assistance in real legal disputes, such as guiding you in clarifying the context of the case, generating directly usable legal summaries, or offering clear suggestions for next steps.

✓ **Legal Comprehension Accuracy:** Evaluates the professionalism and accuracy of the system's understanding of legal issues, including the identification of core legal disputes in the case, the correct use of legal terminology, and the rigor of logical reasoning.

✓ **Lawer Matching:** Evaluates whether the lawyers recommended by the system match the needs of your case and whether clear reasons for the recommendations are provided, making you feel that the suggested results have practical value for contact.

Scoring Results

Evaluation Dimension	LawdigitalTwin	Deepseek	doubao
Evidence Integration Capability	4.5	3.9	4.0
Emotional Support	4.1	3.8	3.9
Practical Value	4.6	3.5	3.3
Legal Comprehension Accuracy	4.0	4.1	4.0
Lawer Matching	4.5	2.3	2.5

Evaluation: LawDigitalTwin V.S Deepseek/doubao

Scoring Notes:

• Data sourced from average participant ratings (1-5 scale). The experiment employed a between-groups design to ensure fair comparison.
• LawDigitalTwin outperforms the other models across four dimensions, particularly excelling in Evidence Integration Capability, Practical Value and Lawer Matching.
• Innovations in LawDigitalTwin's dynamic workflow and emotion-task decoupled model enable breakthroughs in both legal professionalism and user experience.

AAAI-26 Bridge between Artificial Intelligence and Law