

The Automated but Risky Game: Modeling Agent-to-Agent Negotiations and Transactions in Consumer Markets

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Abstract

AI agents are increasingly used in consumer-facing applications to assist with tasks such as product search, negotiation, and transaction execution. In this paper, we investigate a future setting where both consumers and merchants authorize AI agents to automate the negotiations and transactions in consumer settings. We aim to address two questions: (1) Do different LLM agents exhibit varying performances when making deals on behalf of their users? (2) What are the potential risks when we use AI agents to fully automate negotiations and deal-making in consumer settings? We designed an experimental framework to evaluate AI agents’ capabilities and performance in real-world negotiation and transaction scenarios, and experimented with a range of open-source and closed-source LLMs. Our analysis reveals that deal-making with LLM agents in consumer settings is an inherently imbalanced game: different AI agents have large disparities in obtaining the best deals for their users. Furthermore, we found that LLMs’ behavioral anomaly might lead to financial loss when deployed in real-world decision-making scenarios, such as overspending or making unreasonable deals. Our findings highlight that while automation can enhance transactional efficiency, it also poses nontrivial risks to consumer markets. Users should be careful when delegating business decisions to LLM agents.