

# Agentic AI: Autonomous Decision Making Systems

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## Abstract

Agentic AI refers to autonomous systems powered by Large Language Models (LLMs) that can perceive environmental states, reason through complex decisions, and execute actions to achieve business objectives with minimal human intervention. It can assist in building a scalable framework for autonomous decision-making in business applications. This paper proposes a framework for designing and implementing autonomous agents that solve real-world business problems. The extensive pretraining of LLMs enables agents to navigate vast problem spaces more effectively, facilitating accelerated problem-solving. The methodology adopts a modular architecture that divides the complex business problems into sub-tasks, each of which can be handled by sub-agents.

Furthermore, the integration of learning and adaptation mechanisms allows these systems to modify their responses to environmental feedback, thus improving performance over time. Our findings indicate that while Agentic AI outperforms manual baseline and traditional rule-based approaches in terms of operational speed and adaptability, challenges related to LLM stochastic behavior in edge cases persist, necessitating human-AI collaboration. Ultimately, this architecture enables the deployment of autonomous decision-making agents capable of navigating the ever-evolving business requirements of modern enterprises.