

# Comparative Analysis of Agentic AI and its Prototypical Application in Healthcare

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An agent is a computer system that is situated in some environment, and that is capable of autonomous action in this environment in order to meet its design objectives [1]. Based on the seminal definition stated above, the characteristics of an agent can be described, such as flexibility, autonomy, situatedness, adaptability, proactivity, and sociability [2]. An intelligent agent should be reactive, proactive and social. An agent is reactive if it is able to perceive its environment and respond in a timely fashion to changes occurring in it. An agent is proactive if it does not simply act in response to its environment, but is able to exhibit opportunistic, goal-directed behaviour and take the initiative where appropriate. An agent is social if it is able to interact, when appropriate, with other manmade agents (software agents or robots) and humans in order to complete their own problem-solving and to help others with their activities, forming a multiagent system [3].

More recently, the term “agentic AI” has been coined [4-8]. Agentic AI systems are systems that adaptably pursue complex goals using reasoning and with limited direct supervision [4]. To characterise agentic AI systems, another term “agenticness” has been introduced. The degree of agenticness in a system is defined in [4] as “the degree to which a system can adaptably achieve complex goals in complex environments with limited direct supervision.” Agenticness can be divided into the components of goal complexity, environmental complexity, adaptability and independent execution. Agentic AI systems are generally viewed as operating in pursuit of goals defined by humans and in environments determined by humans (and often in cooperation with human “teammates”), rather than fully-autonomous systems that set their own goals.

The purpose of this Master’s topic is twofold. First, the M.Sc. project should compare autonomous agents and multi-agent systems with agentic AI systems and clearly bring out their differences and similarities [e.g., 9-10]. Second, the M.Sc. project should design and implement a prototypical agentic AI system, which would simulate solving a problem in the healthcare domain and would clearly demonstrate how agentic AI could or could not be useful for this domain [e.g., 11-12].

## References

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