

AI Agents

AI agents serve to automate tasks that would otherwise be done through human intervention. Such automation allows for efficiency and speed. AI agents utilize artificial intelligence to analyze their environment and make decisions based on the information they gain from the environment. They then take actions based on the information to work towards or achieve a specific goal. This all happens with minimal human interaction.

The main types of AI agents include simple reflex agents, model based reflex agents, goal based agents, utility based agents, and learning agents. Reflex agents are simple in nature and usually utilize simple “if-then” rules. A good example of a reflex agent could be a thermostat that turns on an air conditioner only when the temperature in an area is at or below a certain threshold. Model-Based reflex agents utilize an internal model of the world around them, which allows them to process changes and develop an understanding of the environment around them. Goal-Based agents work by taking and planning actions such that they work towards achieving a long-term goal based on their understanding of current and potential future states. A good example of this would be a GPS navigation system that plans most optimal route to a specific destination. Utility-Based agents are the most sophisticated types of agents, and are the type of agents that will likely be utilized in our project. These agents maximize a utility and aim to make a decision that lead to the best/most desirable outcome. The final type of agent is learning agent. As the name suggests, these agents learn from past experiences to adapt and modify their behavior to become more efficient in performance over time. They utilize a feedback-driven learning module in order to function.

AI Agents can be built from various tools and platforms. Some popular frameworks include LangChain, CrewAI, AutoGen, SuperAgent, and MetaGPT. These would serve as backend logic in a project or application. LLMs and APIs include OpenAI API, LM Studio and OpenRouter. Based on my research, tools and platforms that will be useful in our group project would likely be LangChain. We aim to develop our app using React, and LangChain seems to be a popular choice for developing AI Agents.

One problem for which an AI agent could be helpful would be an automated class registration system. Such a system would allow students to pick classes that suit their academic and schedule needs. An AI agent in this context would work to pick the best classes and design an optimal schedule for a semester for the user. Often times, students have trouble picking the right classes, and time conflicts between classes become a big problem in schedule determination. An AI Agent in this scenario could effectively do the thinking for the student and generate multiple schedules for a student, who would then be able to pick the one that best fits their schedule needs. The AI Agents success will be measured based on the recommended schedule and whether it suits the students needs.

Our group capstone project is to utilize AI to make an AI Sales Data Analyst which stores data from transactions and tracks inventory. The AI Agent will create reports, track product and sales statistics. It will also be involved in making recommendations based on this data, including trends to allow the vendor to make decisions that will increase profitability, efficiency and overall sales. By writing this report, I have gained a better understanding on what the different type of AI Agents are, as well as tools and platforms that could be used in their implementation.