*Skrivet av Evan Saboo och Perttu Jääskeläinen*

An agent is a computer program that somehow works in a domain to fulfill its assigned goal. Agents that are programmed in physical robots uses sensors to know what is going on, and then use actuators to perform their tasks or goals. There are different kinds of agents which uses which uses different methods to achieve their goal. Some types of agents are software agents, intelligent agents, meta-agents and multi-agent systems . [[1]](#footnote-0)[Lecture 5]

Software agents are the computer analog of autonomous robots, where the agent is created for the purpose of fulfilling a task without constant supervision where it is also able to adapt to its environment, briefly or for a longer period of time depending on its goals. [[2]](#footnote-1) [[3]](#footnote-2)

Examples of modern intelligent agents are Siri and Alexa, where the agents can receive tasks (“What is the weather today?”, “What is the time?”) and can retrieve the information through the web using supercomputers and large databases.[[4]](#footnote-3) In general, intelligent agents are used to fetch information that would normally be gathered by humans, where displaying the information is done by either interacting with the agent through commands (Siri, Alexa), or automatically displaying the information to the user (stock stats, weather reports).[[5]](#footnote-4)

Meta agents are agents that monitors others intelligent agents. By monitoring other agents in an environment, meta agents can give instructions the other agents to find the fastest or best way to reach the end goal. One can think of it as a game of soccer where the coach is the meta agent and the players are intelligent agents. [Lecture 5]

A multi agent system (MAS) consists of a number of agents that can interact with their environment and each other and work towards an overall goal. In MAS, the environment is always dynamic based on each individual's view. There are more agents that can influence the world. The information that MAS has is distributed between the agents and it because the information is not available to all. The world is thus only partially observable for each individual agent.[[6]](#footnote-5)

There are also other types of agents such as bargain agents, BDI (Beliefs –Desires –Intentions) agents, mobile agents, autonomous agents, interface agents, user agents information agents and many more.[Lecture 5]

Which instruments does an agent use for perceiving and acting upon a physical environment?

An agent is anything that can be viewed as perceiving and acting upon the environment through the sensors and actuators.[[7]](#footnote-6)

Give real world examples of agents that are being used in our society today.[[8]](#footnote-7)

* A digital assistant is an agent who can perform tasks or services for a person.
* Computer bots in games are also agents that responds to your actions ,e.g. enemies or opponents.
* Spam filters in mail services.
* Robot vacuum cleaners are agents that uses sensors and actuators to clean an environment.

What are meta-agents?

Meta agents are agents that monitors others intelligent agents. By monitoring other agents in an environment, meta agents can give instructions the other agents to find the fastest or best way to reach the end goal. [Lecture 5]

Explain multi agent systems.

A multi agent system (MAS) consists of a number of agents that can interact with their environment and each other and work towards an overall goal. In MAS, the environment is always dynamic based on each individual's view.[[9]](#footnote-8)

Explain autonomous agents.

Autonomous agents are agents that can take in information from its environment by using sensors and determines its next course of action. Self-driving cars are autonomous agents that can drive from point A to B without any help from the driver. [Lecture 5]

What are some modern Intelligent Agents?

Siri by Apple, created as a voice command AI to perform tasks. Alexa, created by Amazon to receive commands similar to Siri.

In modern AI, multiple types of agents exist. Two of these are meta- and intelligent agents. Explain how they are related. [[10]](#footnote-9) [Lecture 5]

A meta agent isn’t an intelligent agent itself, but it monitors multiple intelligent agents performing tasks. In addition, the meta agent controls the flow of the system, can solve conflicts and plan how to achieve a task in the system. Intelligent agents, however, only perform a set task in a simple domain, while meta agents are part of a undefined domain and may adapt to situations that can arise.

Explain what software agents are

Software agents are the computer analog of autonomous robots, where the agent is created for the purpose of fulfilling a task without constant supervision where it is also able to adapt to its environment, briefly or for a longer period of time depending on its goals. [[11]](#footnote-10) [[12]](#footnote-11)

Robocup is an AI competition where multiple robots play for a team and try to score against the other, as in a regular soccer game. What type of agents are used in these systems? [Lecture 5][[13]](#footnote-12)

Robocup, where teams of intelligent agents play soccer against each other. Here, each robot is an intelligent agent, while the system itself is a meta-agent system controlling the game. The type of agents used are intelligent agents that are apart of a meta-agent system.

In modern AI, a popular field is self driving vehicles. Among others, Tesla develops and sells multiple self-driving cars, and are now also developing self driving trucks. Which AI field do these systems belong to? [Lecture 5]

A self driving car is classified as a autonomous vehicle, which is controlled by an autonomous agent.

1. <http://wiki.c2.com/?WhatIsAnAgent> [↑](#footnote-ref-0)
2. <https://whatis.techtarget.com/definition/software-agent> [↑](#footnote-ref-1)
3. <https://medium.com/@jackkrupansky/what-is-a-software-agent-6089dfe8f99> [↑](#footnote-ref-2)
4. <https://study.com/academy/lesson/intelligent-agents-definition-types-examples.html> [↑](#footnote-ref-3)
5. <https://www.techopedia.com/definition/28055/intelligent-agent> [↑](#footnote-ref-4)
6. <https://www.cs.cmu.edu/~softagents/multi.html> [↑](#footnote-ref-5)
7. <https://courses.cs.washington.edu/courses/csep573/11wi/lectures/10-agents.pdf> [↑](#footnote-ref-6)
8. <https://www.devteam.space/blog/10-real-life-examples-of-artificial-intelligence/> [↑](#footnote-ref-7)
9. <https://www.cs.cmu.edu/~softagents/multi.html> [↑](#footnote-ref-8)
10. <https://pdfs.semanticscholar.org/8d33/3e2812e841ffdae08adb6dcff2d402f636b1.pdf> [↑](#footnote-ref-9)
11. <https://whatis.techtarget.com/definition/software-agent> [↑](#footnote-ref-10)
12. <https://medium.com/@jackkrupansky/what-is-a-software-agent-6089dfe8f99> [↑](#footnote-ref-11)
13. <https://www.robocup.org/> [↑](#footnote-ref-12)