

- What is artificial intelligence?
- Agents acting in an environment

Learning objectives: at the end of the class, you should be able to

- describe what an intelligent agent is
- identify the goals of Artificial Intelligence
- classify the inputs and the outputs of various agents

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  - ▶ it makes appropriate choices given perceptual and computational limitations

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Can a book or article *do* things?  
Convince? Argue? Inspire? Cause people to act differently?

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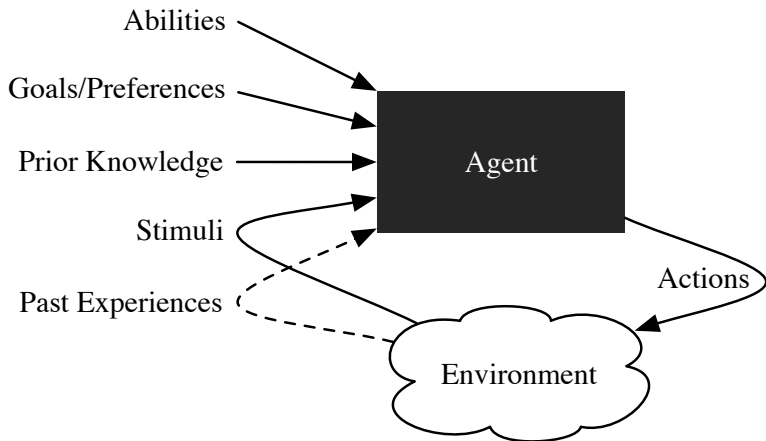
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- **Engineering goal:** design useful, intelligent artifacts.
- Analogy between studying flying machines and thinking machines.

# Agents acting in an environment: inputs and output



# Inputs to an agent

- **Abilities** — the set of possible actions it can perform
- **Goals/Preferences** — what it wants, its desires, its values,...
- **Prior Knowledge** — what it comes into being knowing, what it doesn't get from experience,...
- **History** of stimuli
  - ▶ (current) **stimuli** — what it receives from environment now (observations, percepts)
  - ▶ **past experiences** — what it has received in the past

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- **past experiences:** how braking and steering affects direction and speed...



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- **past experiences:** prior test results, effects of teaching strategies, . . .

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- **past experiences:** when people come and go, who likes what temperature

# Example agent: medical doctor

- abilities:
- goals/preferences
- prior knowledge:
- stimuli:
- past experiences:

# Example agent: Apple Inc.

- abilities:
- goals/preferences
- prior knowledge:
- stimuli:
- past experiences:



# Other Agents

- user interface
  - bee
  - smart home
  - ...
- 
- abilities:
  - goals/preferences
  - prior knowledge:
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# Example agent:

- abilities:
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The **abilities** of an agent are:

- A What functions the agent is able to compute
- B The set of actions available to the agent
- C Whether it can play tennis
- D What the agent wants
- E What it has learned from experience

An agent that does not learn does not need:

- A Abilities
- B Goals/Preferences
- C Prior Knowledge
- D Observations
- E Past experiences

Prior knowledge is not:

- A what is programmed into an agent
- B what an agent gets from experience
- C what biology has evolved for animals when they are born
- D required for both artificial and natural agents
- E what psychologists call “nature” in the nature-nurture debate

# Clicker Question

What is the role of data in the applications presented:

- A It was all that was needed to get the application to work
- B It was ignored in the applications presented
- C All of the applications required data sets of the size of the set of all of the photos that are posted on the web
- D Only expensive proprietary data is useful
- E It was used in many of the applications to improve performance

# Agents acting in an environment

