

## 2. Intelligent agents(IA)

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Feb, 2024

### 1. Intelligent agents

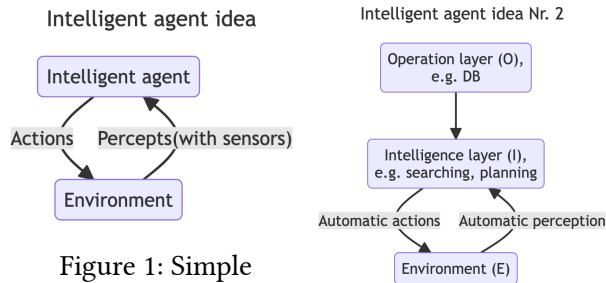


Figure 1: Simple intelligent agent representation

Figure 2: Extended intelligent agent representation

We can describe an intelligent agent as a mathematical function which maps perceptions to the specific action:

$$f : P \rightarrow A,$$

where  $P$  is a perception set and  $A$  is an action set.

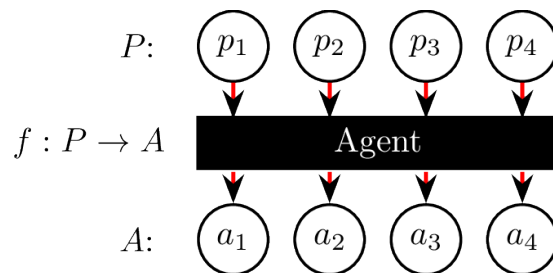


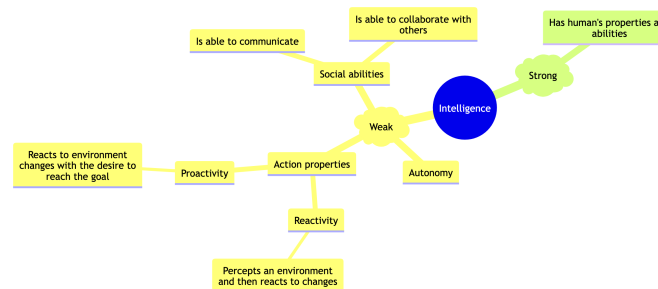
Figure 3: Agent as a function can be seen as a black box

Agent is a function that is a black box, i.e. we don't know how it produces its results. An agent receives information(perceptions) from sensors( $P$ ), processes them via function( $f$ ) and returns back an action(from set  $A$ ) to execute.

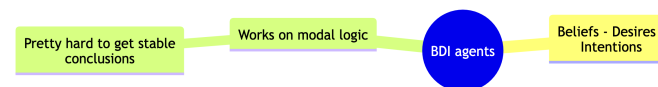
### 2. Intelligent agent types



### 3. IA intelligence



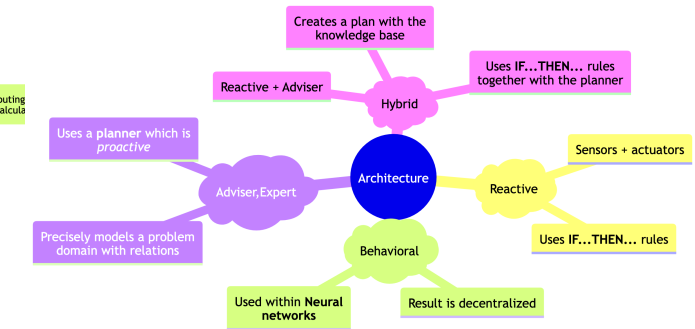
### 4. BDI agents



### 5. IA as a program

An agent can be described as a program:

agent = program + architecture(computing platform)



Architectural properties can be described with the abbreviations **PAGE** and **PEAS**.

- **PAGE** - percept, actions, goals and environment.
- **PEAS** - performance, environment, actuators and sensors.