Modul : Intelligent Agent

Agent & Environment

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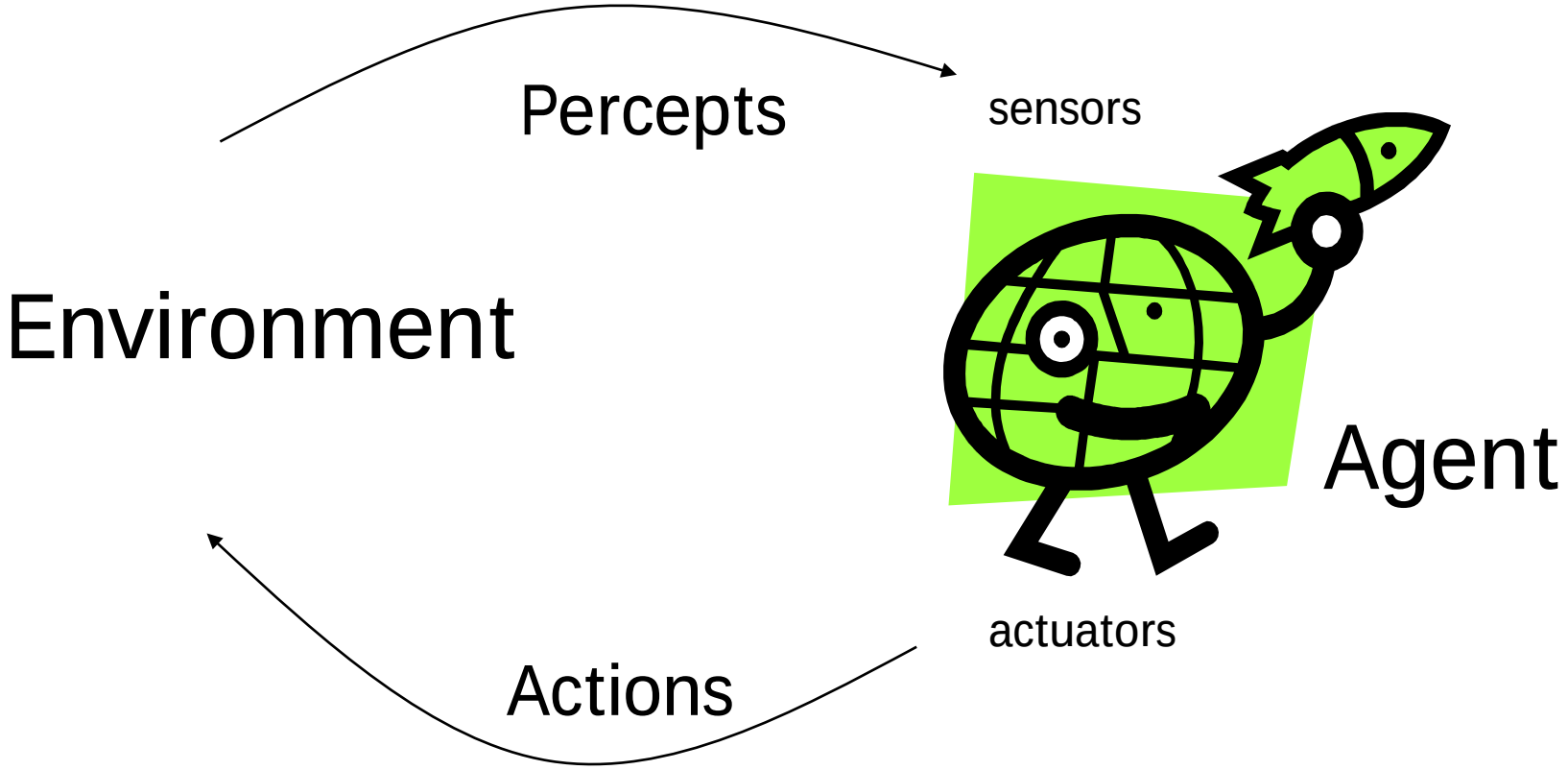
Inteligensi Buatan
(Artificial Intelligence)

Agent & Environment



What is Agent?

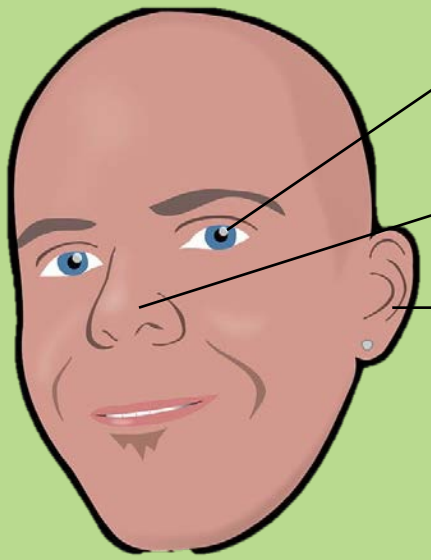
Anything that can be viewed as perceiving its environment through sensors and acting upon that environment through actuators.

- A robot
- A factory
- A web shopping program
- …

Computational agents that behave autonomously

Example: Human Agent

Sensors



Eyes

Nose

Ears

Actuators

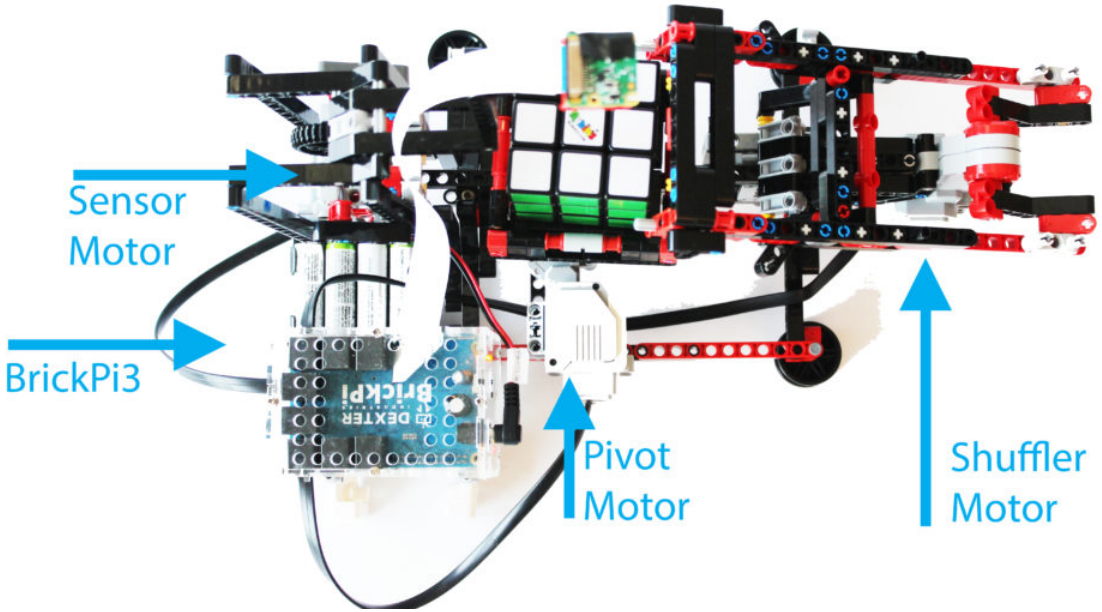
Hands

Legs

Other Example: Rubic Solver Robot Agent

Sensors

Actuators



https://www.dexterindustries.com/projects/brickuber-project-raspberry-pi-rubiks-cube-solving-robot-project/

Modul : Intelligent Agent

Agent Model

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Inteligensi Buatan
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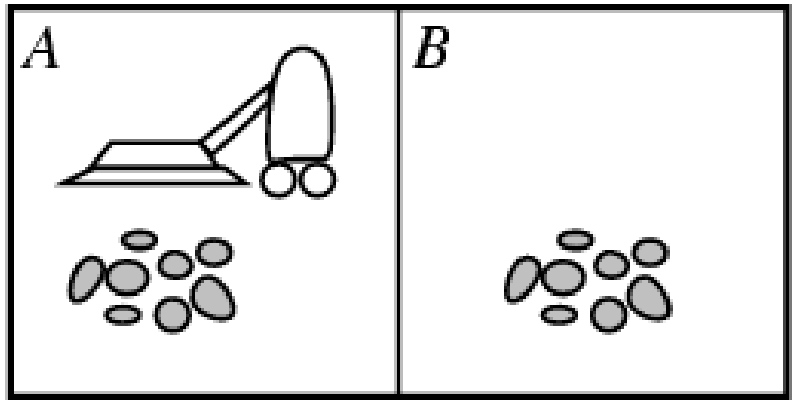
Vacuum-cleaner World

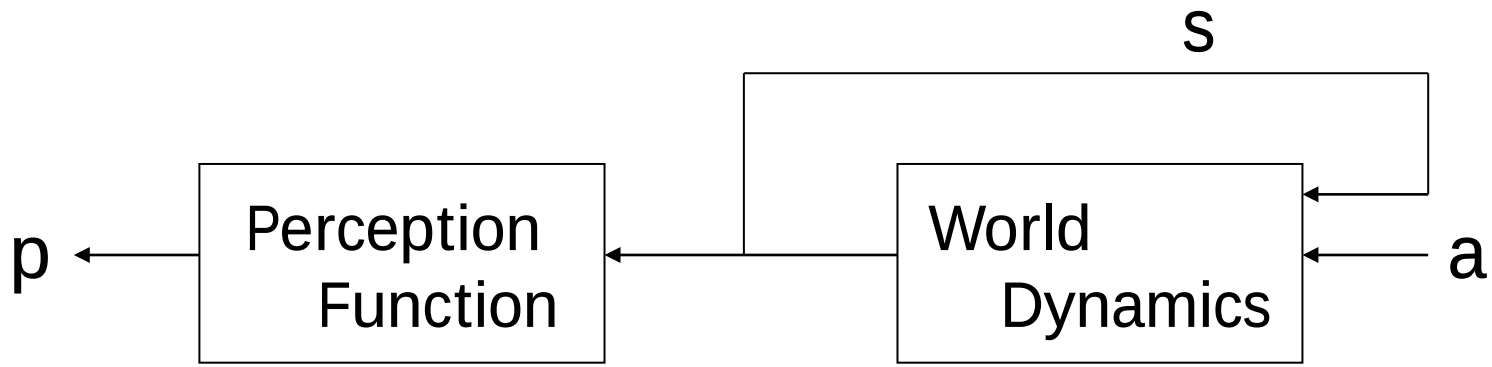


Percepts: something that is perceived by the agent **sensors**
→ location and contents: [A, Dirty]

Action: something that is carried out by the agent **actuators**
→ *Left*, *Right*, *Suck*, *NoOp*

How to Model the Agent World ??

- **Percept Space**
- **Action Space**
- **Internal State**
- **Perception Function: S → P**
- **World Dynamics: S x A → S**



Agent Design

Utility Function (U):
S → real
S* → real

Problem:
Find P* → A

Mapping sequence of percept (P*) to action (A)

Maximize U
(sequences of states S)

Remember:
S x A → S

Modul : Intelligent Agent

Rational Agent

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Inteligensi Buatan
(Artificial Intelligence)

Rational Agent

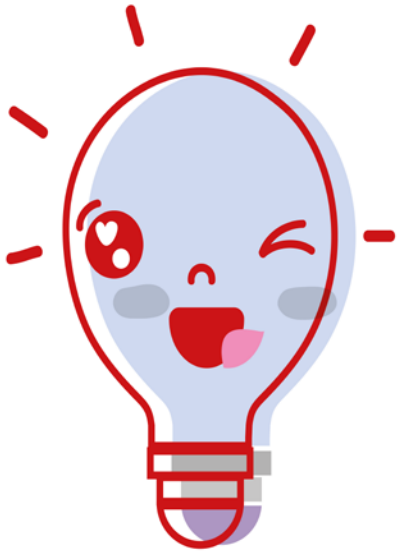
Strive to **DO THE RIGHT THING**

- Based on what it can perceived
- Based on what it can perform

Performance Measure:
Objective Criterion for Success of an Agent's behaviour

Rational Agent (2)

Sequences of Percepts



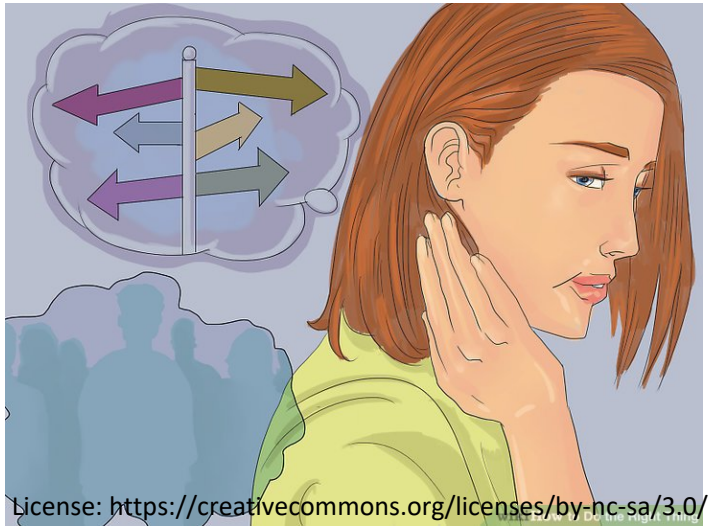
https://www.vecteezy.com/free-vector/kawaii

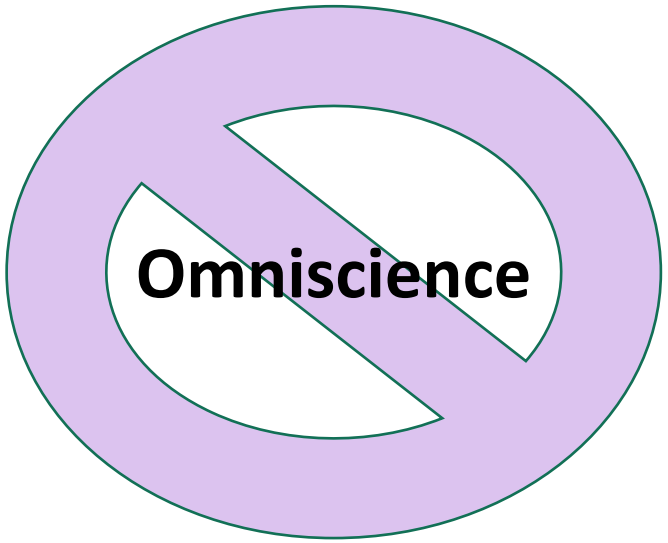
Actions

Performance Measurement

"Knowledge"

Rationality





Limited Rationality

Rationality limitation:
Computational Constraint

Agent Design

Problem:
Find P* → A

Mapping sequence of percept (P*) to action (A)

Maximize U
(sequences of states S)
Subject to Computational Constraints

P E A S

THANK YOU