

Chapter0. Introduction

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NOTE TAKING AREA

AI introduction

Agents: an abstract concept, similar to a point (object).

Rough idea of AI: 1950 by Alan Turing "Computing machinery and intelligence".

Birth: 1956 by John McCarthy "Dartmouth Artificial Intelligence (AI) Conference".

AI: how to make machines (computers) handle intelligent tasks that could only be handled by human.

Human beings are intelligent, how to build other agents that are at least as intelligent as we are.

Basic concepts

An agent is anything that can be viewed as **perceiving its environment through sensors** and **acting upon that environment through actuators**.

- Agent function: describe agent's behavior, mapping given percept sequence to an action.
- Agent program: implement agent function.

Acting humanly: Turing test.

Rationality: a rational agent should select an action that is expected to maximize its performance measure.

Expected and actual performance is different because the action is selected based on limited information.

The agent should be able to **gather information** and **learn from information**, in order to be autonomous.

PEAS: specification of a rational agent (task environment).

Representation

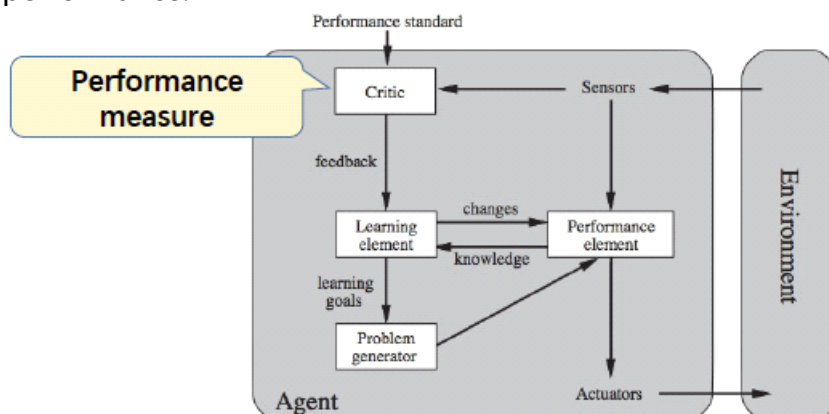
Computing is main approach to realize an AI: data structure (representation), algorithm, code.

Representation: formal definition of PEAS.

Data representation, model representation.

How to represent an agent:

- Simple reflex agent: if-then rules, without history information.
- Model-based reflex agent: model, with history information.
- Goal-based agent: additional goal information (decision function, binary) as input.
- Utility-based reflex agent: "goal information" is a utility function.
- Learning agent: learn from interaction with environment to improve its performance.



CUE COLUMN

SUMMARIES

1. Introduction to AI and agent.
2. Basic concepts of agents, PEAS.
3. Representation of agent, 5 types of representation of agents.