

Artificial Intelligence a Modern Approach

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The first chapter (Introduction)

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INTRODUCTION

1. We call ourselves Homo sapiens—man the wise.
2. The field of artificial intelligence, or AI, Artificial intelligence is concerned with not just.
3. Whereas a student of an older science such as physics might feel that the best ideas have already been discovered.

INTRODUCTION

Artificial intelligence (AI) was officially introduced in 1956.

Reasons for studying artificial intelligence:

1. Artificial intelligence tries to understand intelligent beings.

Therefore, one of the reasons for studying it is to learn more about ourselves.

2. Interesting and useful intelligent beings.

INTRODUCTION

Thinking humanly

Thinking rationally

Acting humanly

Acting rationally

INTRODUCTION

Intellectual and reasoning processes

**Systems that think
like humans.**

**Systems that think
logically.**

**Systems that act
like humans.**

**Systems that work
logically.**

Focus on behavioral processes

Providing a
human system

The ideal of
intelligence

INTRODUCTION

Acting Human: The Turing Test Approach

If a test is administered by a computer and the test-taker cannot determine whether the answers were given by a human or a computer, the computer wins the Turing test.

INTRODUCTION

Acting Human: The Turing Test Approach

The computer must have the following capabilities:

- Natural language processing: conversation
- Representation of knowledge: storage of information
- Automatic reasoning: reasoning and extraction
- Machine learning: pattern discovery and extrapolation

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Thinking humanly: a cognitive modeling approach

How to identify the functioning of human thoughts:

1 - Introversion

2 - Psychological experiences

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Thinking humanly: a cognitive modeling approach

Cognitive science: brings together computer models of AI as well as psychological techniques in order to obtain accurate theories of the workings of the human mind.

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Problems of human thinking and performance

- There is no fixed and specific human criterion, which means that it is not possible to find a human whose behavior or performance is approved by all other humans.
- On the other hand, human behavior may change over time.

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Thinking Logically: Rules of Thinking Approach

In attitude (thinking rules), the main emphasis has been on correct conclusions.

- **The secret of right thinking:** Aristotle tried to discover it.
- **Measure:** It is one of the topics raised by Aristotle, who created patterns for the agreement structure that always obtains correct results as much as correct premises.
- **Example:** Socrates is human, all humans die, so Socrates will die.

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Two major problems of rational thinking

Converting informal knowledge into formal form by logical signs is not easy.

There is a major difference between being able to solve a problem in theory and doing it in practice.

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Acting rationally: The rational agent approach

According to the situation in which it is located, act in such a way that the best result is obtained.

INTRODUCTION

Advantages of rational (logical) agent design

The generality of the attitude (rules of thinking): There is usually a logical thought before doing a logical action.

In comparison with approaches based

on human behavior or thinking, it is much more subject to scientific progress, because the standard of rationality is clearly defined and quite general, while there is no fixed human criterion.

Suggested topics for class presentation

- Meta-heuristic algorithms
- Machine learning algorithms
- Artificial neural network
- support vector machine
- Bayesian network
- Fuzzy logic
- Fuzzy inference systems