COMPSCI 366 S1 C 2006
Foundations of Artificial Intelligence

—Organizational Issues and Motivation—

Hans W. Guesgen
Computer Science Department

THE UNIVERSITY OF AUCKLAND
NEW ZEALAND

Primary Resources

- **Lectures**

  Tuesday, Thursday, and Friday, 10:00, MLT3

- **Course web site**

  http://www.cs.auckland.ac.nz/compsci366s1c/

Assessment

- **Assignments**
  2 assignments (worth 20%)

- **Test**
  Wednesday, 10 May 2006, 18:30–20:00, B15 (worth 20%)

- **Final exam**
  Date to be announced (worth 60%)

Class Representative

- Name

- ID number

- Email address

- Home address

- Phone number

The 366 Team

- **Hans Guesgen**
  hans@cs.auckland.ac.nz
  (lecturer and supervisor)

- **Ian Watson**
  ian@cs.auckland.ac.nz
  (lecturer)

- **William Zhu**
  fzhu009@ec.auckland.ac.nz
  (administrator and tutor)

Main References

- Stuart Russell and Peter Norvig.
  Artificial Intelligence: A Modern Approach (Second Edition).
  Prentice-Hall, New Jersey, 2002.

- Ivan Bratko.
  Prolog : Programming for Artificial Intelligence (Third Edition).
  Addison-Wesley, Readings, Massachusetts, 2000.

Additional References

- Steven L. Tanimoto.
  The Elements of Artificial Intelligence Using Common Lisp (Second Edition).
  Computer Science Press, New York, 1995.

- Thomas Dean, James Allen, and Yiannis Aloimonos.
  Artificial Intelligence: Theory and Practice.
  Benjamin/Cummings, Redwood City, California, 1995.

Example Programs

Ivan Bratko's collection of example Prolog programs from the textbook can be found on the course resources web page:

http://www.cs.auckland.ac.nz/compsci366s1c/resources/

Examples of AI Systems

- Language translation systems

- Air traffic control systems

- Supervisory systems

- Automated personal assistants

- Intelligent highways

- Robots for hazardous conditions

- . . .

The Physical Symbol System Hypothesis

A physical symbol system consists of a set of entities, called symbols, which are physical patterns that can occur as components of another type of entity called an expression (or symbol structure). Thus, a symbol structure is composed of a number of instances (or tokens) of symbols related in some physical way (such as one token being next to another).

A physical symbol system is a machine that produces through time an evolving collection of symbol structures.

A physical symbol system has the necessary and sufficient means for general intelligent action.

[Newell and Simon, 1976]

What Is an AI Technique?

An AI technique is a method that exploits knowledge that should be represented in such a way that:

- The knowledge captures generalizations.

- It can be understood by people who must provide it.

- It can easily be modified to correct errors and to reflect changes in the world.

- It can be used in a great many situations.

- It defines its own range of applicability.

The Turing Test
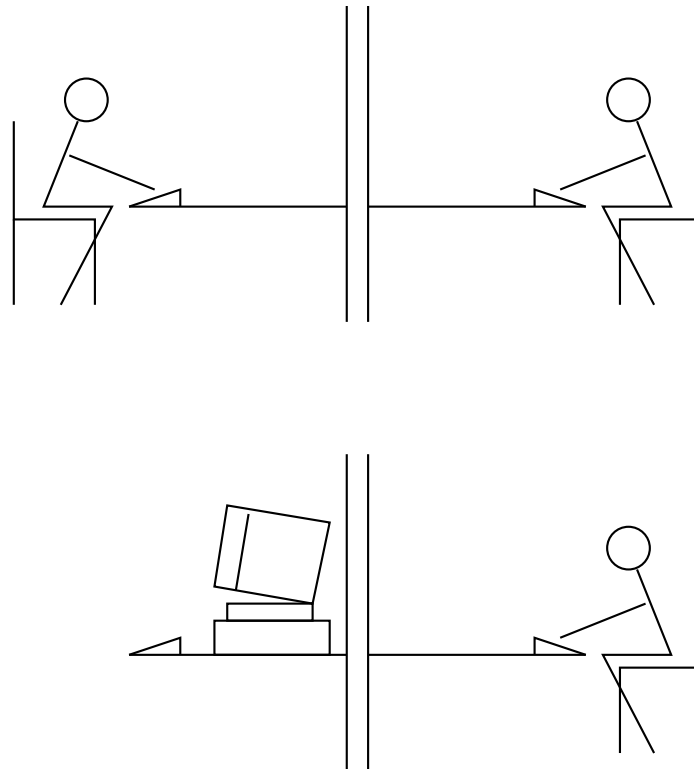
Outline

- Introduction

- History

- Logic

- Reasoning under uncertainty

- Search

- Planning

- Agents