

Artificial Intelligence: Course outline

Andrea Roli

DEIS

Alma Mater Studiorum Università di Bologna – Italia
andrea.roli@unibo.it

Objectives

- Overview of main AI topics
- Wide spectrum of subjects (rather than just a few in detail)
- Methodology and tools for problem solving
- Outlook at AI research
- Propaedeutic to applications and advanced courses in problem solving, decision systems, planning, robotics, data mining, collective intelligence, etc.

Contents (1/2)

- Introduction: History and foundations of AI
- Problem solving:
 - Uninformed and informed Search
 - Constraint Satisfaction Problems and Constrained Optimization problems (complete and incomplete techniques)
 - Adversarial Search: two players games, games with uncertainty
- Decision support systems and technologies
 - Knowledge representation
 - Reasoning
 - Expert systems

Contents (2/2)

- Planning (basics)
- Machine learning
 - Basics of:
 - Decision trees
 - Ensemble learning
 - Reinforcement learning
 - Evolutionary computation
 - Neural networks

Study materials

- Textbook:
 - **Russell, Norvig.** *Artificial intelligence: A modern approach*, **2nd edition.** **Pearson/Prentice Hall.**
 - Also edition in Italian, 2 vols (2nd used partially in this course)
- Slides and other resources:
<http://elearning.ing2.unibo.it>