Artificial Intelligence

Information

Both, the lecture and the lecture materials are in English. The core of the course is based on the book AIMA Artificial Intelligence: A Modern Approach 3th edition by Russel & Norvig. During the laboratories we are studying the Clojure - a modern JVM based dialect of Lisp.

Bibliografia

Publications

2010

- Stuart Sierra Luke VanderHart, Practical Clojure, 2010

2009

- Stuart Russell, Peter Norvig, Artificial Intelligence: A Modern Approach, 2009
- Stuart Halloway, Programming Clojure (Pragmatic Programmers), 2009

Net sources

- Excelent on-line introduction to AI AI Class
- AI Class supplementary materials AI Class Archive

Lectures plan

1. Introduction
    1. What is AI – intro.
    2. Introduction to Clojure programming,
    3. Agents,
    4. Search,
    5. Logic,
    6. Planning,
    7. Uncertainty,
    8. Learning,
    9. AI Robotics
2. Agents
    1. Agents and environments

    2. Rationality
    3. PEAS (Performance measure, Environment, Actuators, Sensors)
    4. Environment types
    5. Agent types
3. Solving by Searching
    1. Problem-solving agents
    2. Problem types
    3. Problem formulation
    4. Example problems
    5. Basic search algorithms
4. Uncertainty
    1. Uncertainty
    2. Probability
    3. Syntax and Semantics
    4. Inference
    5. Independence and Bayes Rule
    6. Bayes Rule creation
    7. Efficient representation
5. Probabilistic inferencing in Bayesian Networks
    1. Exact inference by enumeration
    2. Exact inference by variable elimination
    3. Approximate inference by stochastic simulation
    4. Approximate inference by Markov chain Monte Carlo
6. Machine Learning
    1. Classification vs. Regression
    2. Spam filtering
    3. Linear Regression
    4. Gradient methods
    5. Perceptron approach & linear separation
    6. k nearest Neighbors
7. Unsupervised Learning
    1. Introduction
    2. k-Mean
    3. Expectation maximization (as k-Mean generalization)
8. Planning under uncertainty
    1. Markov Decision Process (MDP)
    2. looking for optimal policy functions
    3. terms such as reward, objective
    4. value iteration algorithm
    5. Partial Observable MDP (intro)
9. Reinforcement Learning
    1. MDP revisited
    2. Temporal Difference Learning Algorithm
    3. Q-Learning approach
10. Couple of Clojure lectures showing the basis of the language

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