Artificial Intelligence

Syllabus Number 3B324
Special Subjects
Elective 2 credit

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1. Course Description

We overview artificial intelligence and discuss its limitations and future. Also, this class deals with the following topics; history of AI, classical AI, reinforcement learning, deep leaning, expert system, neural network, Bayes' theorem, symbol grounding problem, frame problem, etc.

2. Course Objectives

The aim of the course is to learn fundamental methods and techniques of artificial intelligence.

3. Grading Policy

Students are evaluated with mini-reports in each lecture (30%), a mid-term exam (30%) and a term exam (40%).

4. Textbook and Reference

Textbook
A Japanese book (ISBN978-4-7973-7026-3) is used.

Following textbooks written in English are recommended.
-Stuart Russel, Peter Norvig, Artificial Intelligence: A Modern Approach, Global Edition, Pearson Education Limited, ISBN978-1292153964, 2016.
-Rolf Pfeifer, Christian Scheier, Understanding Intelligence, ISBN978-0262661256, 2001.

5. Requirements(Assignments)

In this class, students must think, discuss and solve problems in Japanese rather than passively listen to lecture.

6. Note

7. Schedule

[1] Introduction: what is artificial intelligence (AI)?
[2] History of AI: the birth of AI (Dartmouth Conference), good old-fashioned AI, AI winter, AI boom, technological singularity, etc.
[3] Machine learning, reinforcement learning, genetic algorithm, deep learning, etc.
[4] Expert system, board game AI, narrow AI, etc.
[5] Neural networks
[6] Data mining, search algorithm, Bayes' theorem, etc.
[7] Game theory, game AI, minimax, etc.
[8] Summary, mid-term exam
[9] Subsumption architecture, fuzzy logic, etc.
[10] Natural language processing, machine translation, conversational agent, etc.
[11] Decision making algorithm, artificial life, etc.
[12] Symbol grounding problem
[13] Frame problem
[14] Future of AI
[15] Summary, final exam