



人工知能の応用

年度

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担当教員

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授業の概要と目的 (何を学ぶか)

Artificial Intelligence has been widely applied to various fields and even our daily life. This course is to introduce some AI techniques and their applications of solving some real world problems. The first part of the course covers some traditional methods and applications and the second part covers some the state of the art methods and applications.



授業の到達目標

The goal of this course is to equip students with the knowledge and tools needed to solve real-world problems. Upon completion of this course, the students will be able to

- (1) demonstrate the primary AI programming skill;
- (2) understand AI wide applications;
- (3) apply AI techniques to solve a real world problem.



授業の概要と方法

Each lecture will

- review AI related principles and techniques;
- introduce a real problem;
- ask students to find a solution;



授業計画

回	テーマ	内容
1	Fundamentals of AI	Overview of AI: methods, applications, and demos
2	AI programming	Programming language, frequently used data structures
3	Searching and application (1)	Solve the city connection problem
4	Searching and application (2)	Solve the automatic vacuum cleaner problem
5	Game playing (1)	Minimax and alpha-beta algorithms
6	Game playing (2)	2-player AI games: TicTacToe game, Othello game
7	Rule-based decision making system (1)	Introduction of forward chaining, backward chaining, and a rule based system
8	Rule-based decision making (2)	Applications to recommendation systems
9	Decision tree (1)	Introduction and implementation to DT

10	Decision Tree (2)	Applications to some decision making system.
11	Introduction to Machine learning	Supervised/unsupervised
12	Introduction to data mining	Weka: data mining tool
13	Exploratory data analysis	Data mining from an example dataset
14	Term project report	Summarize your AI application (problem, solution, implementation)
15	Final examination	Paper exam on what you have learnt.



授業時間外の学習 (準備学習・復習・宿題等)

Search for references on the Internet using keywords included in Theme



テキスト (教科書)

Refer to Distributed teaching materials



参考書

- Artificial Intelligence - A Modern Approach, Stuart Russell and Peter Norvig, Prentice Hall, ISBN 0-13-103805-2 (English version).
- エージェントアプローチ人工知能, Stuart Russell and Peter Norvig 著, 古川康一監訳、共立出版, ISBN 4-320-02878-3 (Japanese version).
- Data Mining: Practical Machine Learning Tools and Techniques, Han H. Witten, Eibe Frank, and Mark A. Hall, Third Edition.



成績評価の方法と基準

The evaluation is based on attendance 15%, exercises 13%, term report 12%, and final examination 60%.



学生の意見 (授業改善アンケート等) からの気づき

Promote students' motivation.



その他の重要事項

It is interesting to create your own intelligent programs, intelligent agents, or robots using what you have learned for this course.

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