

電気通信大学 平成21年度シラバス

授業科目名	人工知能基礎		
英文授業科目名	Artificial Intelligence		
開講年度	2009年度	開講年次	
開講学期	前学期	開講コース・課程	博士前期課程
授業の方法	講義	単位数	2
科目区分	電気通信学研究科-情報通信工学専攻-基礎科目		
開講学科・専攻	情報通信工学専攻		
担当教官名	渡邊 成良		
居室	総合研究棟825		

公開E-Mail	授業関連Webページ
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<p>【主題および達成目標】</p> <p>This course is offered mainly in Japanese but all materials including textbook and delivered printed matters are written in English and explained in English according to the student's request.</p> <p>The goal of Artificial Intelligence as a science is to make machines do things that would require intelligence if done by humans. This course will introduce students to Intelligent systems based on Rule, Frame, Bayesian reasoning, Fuzzy logic, Neural network and Evolutionary computation.</p> <p>In the course students develop small rule-based systems, design a fuzzy system, explore neural networks, and implement a simple problem as a genetic algorithm. Also, they use Prolog, and MATLAB Fuzzy Logic Toolbox.</p> <p>情報通信工学科の基礎科目の1つであるので、積極的に学ぶことが期待される。 英語で開講される科目II 人間の知的な行動をコンピュータソフトウェアで達成する人工知能に関して、この授業では70年代までに定着した理論や方法の基礎を説明し、80年代以降に提案された代表的な実用例を具体的に取上げる。この授業により、典型的な人工知能技術を理解させ、単純な知的行動を模倣できる計算モデルの設計能力を付けさせる</p>
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<p>【前もって履修しておくべき科目】</p> <p>Students can prepare their own references relating to the following areas of studies;</p> <ul style="list-style-type: none"> o Fundamentals of Logic, Probability Theory and Algebra o Skill of Procedural Programming
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【前もって履修しておくことが望ましい科目】

Programming Language such as C, Prolog, GNU Octave or Matlab
Probability and Statistics

【教科書等】

Michael Negnevitsky, "Artificial Intelligence", Addison Wesley

【授業内容とその進め方】

In this course you should be able (1) to know the history of Artificial Intelligence, (2) to understand and explain knowledge of Prolog Language, Rule-based expert systems, Fuzzy expert systems, Artificial neural network and Evolutionary computation and finally (3) to apply the knowledge for solving assignment problems.

1. History of Artificial Intelligence
2. Rule-Based Expert Systems and Assignment #1
3. Uncertainty management by Bayesian reasoning
4. Fuzzy expert systems and Assignment #2
5. Artificial neural networks and Assignment #3
6. Evolutionary computation and Assignment #4

【成績評価方法及び評価基準(最低達成基準を含む)】

Each assignment which asks to write programs and to execute them will be displayed on a Web page in a class on the scheduled day and students are able to receive suggestions from lecturer and/or a local tutor for solving the assignment on the same day.

We encourage students to work with others and also to post any questions about assignments by e-Mail. The assignment reports should be completed individually and submitted in two weeks after the day when the assignment is given.

- * Four practical assignments @20% each
- * Attendance @20%

* Total value 100%

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【オフィスアワー：授業相談】

Students are responsible for discussions, all assignments and announcements made in class, Web pages and/or e-Mail.

【学生へのメッセージ】

Students must have the following capabilities in prior to taking this class.

- o Capable to have good communication skills & reporting skills in English or Japanese
- o Capable to communicate with text-based E-mail
- o Capable to browse homepage over Internet
- o Have good understanding of the class warning that is described below

* Warning

- o Submission of plagiarized work i.e. work that contains content copied from an unacknowledged source
- o Submission of work without academic merits i.e. work that has little or nothing to material available from reference sources, such as textbooks, websites, etc.
- o Engaging in collusive behaviour i.e. inappropriate working together with other students where individual work is required, or working with people outside your team where team work is required
- o Copying work done by other student
- o ailing to adhere to the university regulations, computer regulations, and the class policy

【その他】

None