

# TIF32313-Artificial Intelligence

## Odd Semester 2011/2012

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### Course Overview

Artificial intelligence has a unique place in science, sharing borders with mathematics, computer science, philosophy, psychology, biology, cognitive science and others. The aim of the course is to give a broad overview of AI techniques, so that when students go into industry or research, they will be able to choose the correct AI techniques for the problems which arise.

A lot of rubbish is talked about AI in popular science and science fiction books. For instance, Roger "the Emperor's new Mind" Penrose thinks that computers will never be intelligent, whereas Kevin "the March of the Machines" Warwick thinks that they will be intelligent enough to take over the earth. Mark "the Human Computer" Jeffery thinks that computers will evolve to be human, whereas Ray "the Age of Spiritual Machines" Kurzweil thinks that humans will eventually choose to be computers. Therefore, another aim for the course is to get across an impression of the aims, achievements, motivations, origins and methodologies in AI, in order to overcome some common misconceptions.

There will be three main parts to the course: (1) Fundamentals – introduction to artificial intelligence, the soft computing, The representation of state space and heuristic Search, (2) Applications of Artificial Intelligence – Expert System, Knowledge Representation, Prolog and Natural Language Processing (3) Some Methods of Intelligent System – Uncertainty, Fuzzy Logic, Artificial Neural Network and Genetic Algorithm.

Date	No	Topic	Reading	Lecture Material
19 Sep	1	Introduction to Artificial		
26 Sep	2	Introduction to Soft Computing		
3 Okt	3	Representation of State Space		
10 Okt	4	Heuriscti Search		
17 Okt	5	Expert System		
24 Okt	6	Knowledge Representation		
31 Okt	7	Prolog		
<b>Mid Exam</b>				
21 Nov	8	Uncertainty		

28 Nov	9	Fuzzy Logic		
5 Des	10	Fuzzy Inference System		
12 Des	`11	Artificial Neural Network		
19 Des	12	Learning methods of artificial Neural Network		
26 Des	13	Genetic Algorithm		
2 Jan	14	Natural Language Processing		
<b>Final Exam</b>				

### Reference Materials

1. Kusumadewi; Sri. 2003. *Artificial Intelligence (Teknik & Aplikasinya)*. Yogyakarta: Graha Ilmu
2. Suyoto. 2004. *Intelegensi Buatan (Teori dan Pemrograman)*. Yogyakarta : Gava media.
3. Russell, Stuart; dan Norvig, Peter. 2003. *Artificial Intelligence A Modern Approach*. International Edition, Edisi 2. New Jersey: Pearson Prentice-Hall Education International.
4. Rich,E. dan Knight, K. 1991. *Artificial Intelligence*. Edisi 2. New York: McGraw-Hill Inc.
5. Kusumadewi; Sri dan Purnomo, Hari. 2004. *Logika Fuzzy untuk Pendukung Keputusan*. Yogyakarta: Graha Ilmu.
6. Kusumadewi; Sri. 2004. *Membangun Jaringan Syaraf Tiruan dengan Matlab & Excel Link*. Yogyakarta: Graha Ilmu.
7. Fausett, Laurence. 1994. *Fundamentals of Neural Networks (Architectures, Algorithms, and Applications)*. New Jersey: Prentice-Hall.
8. Michalewicz, Zbigniew. 1996. *Genetic Algorithms + Data Structures = Evolution Programs*. Springer-Verlag.
9. Turban, Efraim; Aronson, Jay, E.; Liang, Ting-Peng. 2005. *Decision Support Systems and Intelligent Systems*. International Edition, Edisi 7, New Jersey: Pearson Prentice-Hall Education International.
10. Kuswadi; Son. 2004. *Kendali Cerdas: Teori dan Aplikasi Praktisnya*. Yogyakarta : Andi

### Prerequisites

Analisis dan Strategi Algoritma

### Grading and grading policy

The final grade will be based on:

- Midterm exam (20%)
- Final exam (35%).
- Programming assignments (35%)
- Independent assignments (10%)