



CS/CMPE 631 : Research Trends in AI

Instructor's Name: M. M. Awais and Asim Karim

Year: 2002-2003

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Quarter: Spring

Office Hours: TBA

Category: Graduate

TA for the Course: TBA

Course Code
(Units)

CS/CMPE 631 : Research Trends in AI
(1 Unit)

Course Description

In recent years, new concepts, techniques, and application areas have emerged in the broad discipline of AI. This seminar course will provide a forum for the discussion of research trends and problems in three key areas of AI: data mining, robotics, and knowledge representation. A discussion-oriented format will be followed in the course (as opposed to a presentation-oriented format). Students are expected to *lead a discussion* on the topic of one or more recent articles. Others are expected to contribute to the discussion. The goal is to increase comprehension of the topic, to identify research problems, and to evaluate possible solutions. Students will be evaluated on the quality of their discussion, participation, and written *thought-report* for each discussion.

Core/Elective

Elective

Pre-requisites

Grad or senior standing, or permission of instructors

Goals

1. To explore the state-of-the-art in AI
2. To identify research problems and possible solution strategies
3. To develop critical analysis and thinking

TextBooks, etc

A core list of articles and books will be provided. Students are expected to find other relevant material to supplement their comprehension.

Lectures

10 sessions of 50 minutes each. One session per week.

Grading

This course will be graded as Pass/Fail. An aggregate of 50% or more is needed for a Pass grade. The points distribution would be as follows:

- 50% for the quality of the presentation and discussion lead by the student
- 30% for the quality of the participation and contribution to the discussion
- 20% for a written assessment or thought-report submitted immediately after each session.



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Module	Topics	Weeks
1	Knowledge Representation Knowledge representation is a fundamental issue in AI. Without effective knowledge representation, AI is not possible. Recent developments in knowledge representation include semantic nets and graphical models. Some of these approaches will be discussed in the context of semantic Web, data mining, and robotics.	3
2	Data Mining Data mining has emerged as a major frontier of AI. New discoveries and application areas are emerging at a rapid pace. This seminar module will discuss recent developments in the concepts, techniques/algorithms, and applications of data mining. Topics will include interestingness measures, algorithms for association mining and clustering, high-performance computing issues, and application areas.	5
3	Robotics Robotics embodies all of AI. Robots were an early success of AI, and they continue to be a major area of research and development with applications to all spheres of our lives. This seminar module will discuss recent developments in robotics including sensing technologies, navigation, effector technologies, and applications..	2



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Notes

1. An introduction to the topic area will be given in the first session of each module. The subsequent sessions in the module will be lead by student(s) discussing selected article(s).
2. The selection of article(s) for presentation and discussion will be due before the second session (second Friday).
3. The list of articles for the presentations will be made available on the web.
4. The *thought-report* is due at the end of each session. In this report, the student will demonstrate their comprehension and raise significant issues, ideas, problems, solution strategies, etc. This exercise is intended to give students the opportunity to collect their thoughts and put them in writing.
5. The above schedule is not set in stone. It is somewhat flexible depending on student interest and dynamics of the seminar.