CMSI 678  MULTI-AGENT SYSTEMS AND DISTRIBUTED ARTIFICIAL INTELLIGENCE
3.0 units
Dr. Stephanie E. August -- saugust@lmu.edu

Course Description

Objectives
Distributed artificial intelligence combines the areas of artificial intelligence, computer science, sociology, economics, management science, and philosophy. Gerhard Weiss has defined distributed artificial intelligence as “the study, construction, and application of multi-agent systems, that is, systems in which several interacting, intelligent agents pursue some set of goals or perform some set of tasks.” The primary objective of this course is to study the development of multi-agent systems for distributed artificial intelligence. The course provides an introduction to intelligent agents and multi-agent systems as well as agent societies. The course also studies problem solving, search, decision-making, knowledge representation, and learning algorithms in the distributed Artificial Intelligence domain. The secondary objective of the course is to learn how to research and review advances in the field, and to consider the industrial and practical applications of distributed artificial intelligence techniques to real-world problems such as intelligent traffic control.

Required for Computer Science Students
Knowledge of a higher level programming language, such as C++, Prolog, or Lisp. Systems Engineering students would benefit from this knowledge, but are not required to have it.

Expected Work
This will be an interactive class, and students are expected to participate in class discussions.

Weekly readings from the text will be assigned. In addition, supplemental readings will be assigned, and written reviews of each of these will be due at the beginning of class on the day they are due. All readings should be completed prior to lecture.

Written and oral homework will be assigned to reinforce lectures and readings. Assignments will include problem sets, programming assignments, and oral reports. Assignments will be collected and graded.

Students will complete a group or individual project during the course of the term, with details to follow. A conference-style presentation on the project will be made to the class at the end of the term.

Students are responsible for all the material in the assigned readings, whether or not it is covered in class, and for all material presented in class, whether or not it is in the assigned readings.

Exams
One midterm.

Text and Required Materials
Additional References


Grading

The final grade will be weighted as follows:

- Midterm ........................................... 25%
- Project and Presentation ................................................................. 40%
- Paper, Presentation and Paper Summaries ........................................ 20%
- Participation and Assignments ....................................................... 15%

Each student will be required to present at least one research paper during the semester. The presentation should provide an in-depth presentation of the paper and how it is related to the current discussion topic. In addition to the paper presentation, each student will have a number of paper reviews and discussion question assignments. This involves writing a brief one-page review of the paper and preparing three discussion questions. Every student is expected to have read the paper each week and be prepared to discuss the paper in an intelligent manner.

Graduate students will have the option of completing and presenting a set of course-related case studies in place of completing a programming project, although computer science grad students are strongly encouraged to complete the programming project.
Assignments related to the project and course readings will be graded. As time permits, assignments will be reviewed in class on the due date. Assignments, projects, and papers are due at the beginning of class. Late work will only be accepted by prior arrangement.

Refer to the *Teaching Philosophy and Course Policies* handout for additional information.

**Office Hours/Contact Points**

*Office Hours:* Tuesday, 11 a.m. - noon, 1:30-2:45 p.m., 5:20-6:20 p.m.
Wednesday, 5:20-6:20 p.m.
Thursday, 11 a.m. - noon (occasionally cut short for another meeting)

Students are welcome to stop by or make an appointment to see me any time outside standard office hours.

*Office:* Doolan 108
*Phone:* (310) 338-5973
*Internet:* saugust@lmu.edu Put *** CMSI 678 *** in the subject line!!!