COMP 7/8760 Control of Autonomous Agents – Fall 2010

Contact Information:

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Office Hours:

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Also by Appointment by appointment only

Course Description:

COMP 7/8760 - Control Auto Agents (3) Exploration and current applications of nontraditional control methods for design of autonomous agents, both in hardware and software, capable of operating in unusual and complex environments, such as subsumption architectures, adaptive fuzzy systems and software agents; novel learning and action selection paradigms. PREREQUISITE: COMP 6002 or permission of instructor.

Why this course?

Autonomous agents, capable of operating in inhospitable, dangerous, rapidly changing or boring environments, are being widely studied. Examples include Mars rovers, a volcano explorer, an autonomous land vehicle for the military, a fighter pilot's assistant and a household robot, as well as many varieties of software agents. In each case, environmental possibilities are too numerous and too complex to predict. Traditional control methods won't work. Researchers are focusing on new action selection and learning paradigms. This course will guide the student through an exploration of current applications of these paradigms making use of the Web as a primary source.

Resources:

After initial lectures providing background for the student, the primary resource will be material gathered from the web.

Required Text None

Recommended Texts
Maes, Pattie, *Designing Autonomous Agents* & Franklin, Stan *Artificial Minds*

**Evaluation:**

Students will be evaluated on their classroom talks, both content and presentation, on their participation in class discussions, on the content and clarity of the comprehensive, take-home final exam. 8760 students will be held to higher standards in each of the above regards.

**Course Policies:**

**Attendance** Students are expected to attend and participate in all classes.

**Late Policy** Student presentations must be made on schedule.

**Plagiarism/Cheating Policy:**

*Plagiarism or cheating* behavior in any form is unethical and detrimental to proper education and *will not be tolerated*. All work submitted by a student (projects, programming assignments, lab assignments, quizzes, tests, etc.) is expected to be a student's own work. The plagiarism is incurred when any part of anybody else's work is passed as your own (no proper credit is listed to the sources in your own work) so the reader is led to believe it is therefore your own effort. Students are allowed and encouraged to discuss with each other and look up resources in the literature (including the internet) on their assignments, but *appropriate references must be included for the materials consulted*, and appropriate citations made when the material is taken verbatim.

*If plagiarism or cheating occurs, the student will receive a failing grade on the assignment and (at the instructor’s discretion) a failing grade in the course. The course instructor may also decide to forward the incident to the University Judicial Affairs Office for further disciplinary action. For further information on U of M code of student conduct and academic discipline procedures, please refer to:* [http://www.people.memphis.edu/~jaffairs/](http://www.people.memphis.edu/~jaffairs/)

**Course Syllabus:**

**Content**

Autonomous agents, reinforcement learning, genetic algorithms, artificial neural nets, subsumption architecture, behavior selection, classifier systems, adaptive fuzzy systems, software agents, agent specific languages, learning and action selection paradigms.

**Class Activities**

After a series of introductory lectures by the instructor, students will gather information online about recent research on control architectures, and organize and present it to the
Class. Class sessions will be devoted to informal presentation and discussion of material so obtained.