Special Topics in Software

Intelligent Autonomous Agents

Overview: Intelligent autonomous agents are now being used in a broad range of areas from telecommunications, to education, defense and manufacturing. This course focuses on the conceptual basis of intelligent agents, including the theory, implementation, and practical applications of agent systems. At the end of the course, the participants should understand the principles and common applications of intelligent (software and hardware) agents. The term project gives students an in-depth practical experience with applications of software and hardware agents.

Prerequisites: Programming experience in one or more programming languages. A knowledge of artificial intelligence is useful, but not required.

Lecturer: N. E. Reed


Selected papers from journals (e.g. Autonomous Agents and Multi-Agent Systems) and conferences (e.g. Autonomous Agents, IJCAI, ECAI, AAAI).

Grading: Presentation of research papers in class and participation in discussions (30%). Completion of a programming project on agents, a final presentation of the project and a written report (70%).

Term Project: The term project is to develop or modify, then test and evaluate one or more agent systems in an application area of your choice. A written proposal for the project must be submitted by the end of the 4th week of the term and approved by the instructor. The projects are designed to facilitate students’ investigation of one or more agent systems in depth.

Project presentations will occur during the last few lecture sessions of the term. They should be 15 minutes in length with an additional 5 minutes for questions. The written project report will be due at the end of the term.

Topic Outline and Textbook Readings:

- Introduction to intelligent agents and agent-based systems, Ch. 1.
- Multi-agent systems, Ch. 1-2.
- Applications of agents, business, internet and information access, Ch. 2.
- Applications of agents, personal assistants and other applications, Ch. 2.
- Architectures and languages for agent systems, Ch. 3.
- Communication languages and distributed computing, Ch. 3.
- Design and development of agent systems, Ch. 4.
- Agents in complex environments, Articles.
- Adjustable Autonomy and applications, Articles.
- Project presentations.