

Intelligent Agents And Multi Agent Systems

Syllabus Information

CS 3940 - Intelligent Agents & MA System

Associated Term: 2023/24 Academic Session

Learning Objectives:

The aims of this course include introducing the students to the concept and design of an agent and multi-agent system, and the main applications for which they are appropriate. In addition, it presents a contemporary platform for implementing agents and multi-agent systems. Course contents include: Introduction: agents and objects, expert systems, distributed systems; typical application areas for agent systems. Intelligent Agents: abstract architectures for agents; tasks for agents, the design of intelligent agents - reasoning agents, agents as reactive systems; hybrid agents (e.g., PRS); layered agents (e.g., Interrap). Multi-Agent Systems: classifying multi-agent interactions - cooperative versus non-cooperative; zero-sum and other interactions; cooperation - the Prisoner's dilemma and Axelrod's experiments; interactions between self-interested agents: auctions systems; negotiation; argumentation; interaction languages and protocols: speech acts, KQML/KIF, the FIPA framework, ontologies, coordination languages; interactions between benevolent agents: cooperative distributed problem solving (CDPS), partial global planning; coherence and coordination; applications of intelligent agents and multi-agent systems. **Learning**

Outcomes: 1. Understand the notion of an agent and understand the characteristics of applications that lend themselves to an agent-oriented solution; 2. Describe the key issues associated with constructing agents capable of intelligent autonomous action; 3. Understand the key issues in designing societies of agents that can effectively cooperate in order to solve problems; 4. Evaluate the main application areas of agent-based solutions, and be able to develop a meaningful agent-based system.

Required Materials: [Click here for the reading list system](#)

Technical Requirements: The total number of notional learning hours associated with the course are 150. **These will normally be broken down as follows:** 22 hour(s) of Lectures across 11 week(s) 11 hour(s) of Laboratory classes across 11 week(s) 117 hours of Guided Independent Study **Formative Assessment:** Lab sessions - Verbal feedback **Summative Assessment:** Quizzes (10 Hours) - 20% Project (35 Hours) - 20% Written exam (2 Hours) - 60%