Tárgyleírás

Tárgy neve: Multi-Agent Systems

Tárgyfelelős neve: Gulyás László

Tárgyfelelős tudományos fokozata: PhD

Tárgyfelelős MAB szerinti akkreditációs státusza: AT

Az oktatás célja angolul / Aim of the subject:

Knowledge

- They have comprehensive and up-to-date knowledge of general mathematical and computing principles
- Posess the knowledge of specific tools and methods of Artificial Intelligence

Abilities:

- They are able to apply their mathematical, computer science and informatics skills in a novel way in order to solve tasks in IT research and development.
- They are able to formalize complex IT tasks, to identify and study their theoretical and practical background and then to solve them.

Attitude:

- They follow professional and technological developments in their IT field.
- They are committed to lifelong learning and are open to acquiring new IT competencies.

Autonomy, responsibility:

- They take responsibility for their professional decisions made in their IT-related activities.
- They undertake to meet deadlines and to have deadlines met.
- They bear responsibility for their own work as well as for the work of their colleagues they work together with in a project.
- Regarding mission critical IT systems, they can be entrusted with developing and operational responsibilities that are in accordance with their professional competencies.

Az oktatás tartalma angolul / Major topics:

The course provides the students with an introduction to multi-agent systems and autonomous agents (or robots), where the system's units continuously depend on the environment and on each other. Collaborative and competitive situations will both be discussed, as well as principles of system design (including cases where not all participating agents are controlled by the designer). This includes the theory and practice of strategic interaction among self-interested agents.

Topics:

- Origins and foundations of distributed artificial intelligence
- Basics of autonomous agents and agent-oriented programming, including agent-architectures
- Basics of multi-agent systems
- Studying the dynamics of multi-agent systems (simulation)
- Competition in multi-agent systems
- Coordination and collaboration in multi-agent systems
- Communication in multi-agent systems
- Multi-Agent Learning
- Swarm Intelligence and Social Systems
- Design principles for systems with self-interested agents
- Development environments for multi-agent systems

A számonkérés és értékelés rendszere angolul / Requirements and evaluation:

Mixed Assessment, exam

Irodalom / Literature:

Compulsory:

- Wooldridge, Michael J: An introduction to multiagent systems, John Wiley & Sons, 2009. ISBN: 978-0-470-51946-2
- Gerhard Weiss: Multiagent Systems: A Modern Approach to Distributed Artificial Intelligence, The MIT Press, 1999.

Recommended:

- Stuart J. Russell and Peter Norvig: Artificial Intelligence: A Modern Approach. Pearson, Inc. 2010. ISBN: 0-13-604259-7