EL2910 Principles of Networked and Multi-agent Control Systems 7.5 credits

Principer för nätverksbaserade och multi-agent styrsytem

This is a translation of the Swedish, legally binding, course syllabus.

If the course is discontinued, students may request to be examined during the following two academic years

Establishment

Course syllabus for EL2910 valid from Spring 2013

Grading scale

A, B, C, D, E, FX, F

Education cycle

Second cycle

Main field of study

Electrical Engineering

Specific prerequisites

For single course students; 120hp and documented proficiency in English B or equivalent

Language of instruction

The language of instruction is specified in the course offering information in the course catalogue.

Intended learning outcomes

After the course, the student should be able to:

· know the established problems and results in the area of networked and multi-agent control systems

· use the essential theoretical tools to cope with these systems

· analyze stability and performance of basic setups

· be aware of ongoing research in the area

Course contents

Recent technological advances in computational and communication resources have facilitated the control of multi-agent systems. Such systems are comprised of a large number of entities (“agents”) that aim at achieving a global task. Distributed control is preferable in many cases, since it provides scalability, flexibility and redundancy. Moreover they are natural realizations of the limitations in communication, networking, and sensing capabilities which are inherent in multi-agent systems.

Multi-agent systems have a broad range of modern applications such as multi-robot coordination, control of sensor networks, air traffic management, unmanned vehicles and power systems, just to name a few. This course will review the basic problems and develop the fundamental tools for the modeling and control of networked multi-agent systems. Moreover it will indicate possible future research directions.

Disposition

Lectures and homeworks

Course literature

See course homepage

www.s3.kth.se/~dimos/Networked_and_Multi.htm

Examination

- INL1 - Assignment, 1.0 credits, grading scale: P, F
- INL2 - Assignment, 1.0 credits, grading scale: P, F

- INL3 - Assignment, 1.0 credits, grading scale: P, F
- TEN1 - Examination, 4.5 credits, grading scale: A, B, C, D, E, FX, F

Based on recommendation from KTH's coordinator for disabilities, the examiner will decide how to adapt an examination for students with documented disability.

The examiner may apply another examination format when re-examining individual students.

Other requirements for final grade

Lectures and homeworks

Ethical approach

- All members of a group are responsible for the group's work.
- In any assessment, every student shall honestly disclose any help received and sources used.
- In an oral assessment, every student shall be able to present and answer questions about the entire assignment and solution.