FDD3025 Introduction to Behavior Trees in Robotics and AI 3.0 credits

Introduktion till beteendeträd inom robotik och AI

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

Establishment

Course syllabus for FDD3025 valid from Autumn 2022

Grading scale

P, F

Education cycle

Third cycle

Specific prerequisites

None

Language of instruction

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

Intended learning outcomes

Upon completion the students will:

- Know how to use a BT to design the controller of a robot or artificial agent
- Know the advantages of BTs in terms of reactivity, modularity and goal directedness
- Know several design principles for BTs
- Know how to connect BTs with classical control such as Control Barrier Functions
- Know how to connect BTs with Reinforcement Learning
- Know how BTs can be used to prove performance in terms of safety and reaching a set of given goal states

Course contents

BT design principles. Reactivity, modularity and goal directedness of BTs. BTs and classical control methods, BTs and reinforcement learning. How BTs can be used to guarantee properties such as safety and goal convergence.

Examination

- EXA1 - Examination, 3.0 credits, grading scale: P, 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.

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

Examination will be in the form of homework sets and a small final project.

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.