Supervisor: Jørgen Villadsen <jovi@dtu.dk>

Bachelor Projects in AI, Logic and Programming

Multi-Agent Systems

Description

A multi-agent system is a distributed system with intelligent agents capable of sensing and acting and it can be used to solve problems which are difficult or even impossible to handle with traditional approaches.
The purpose of the project is to define, implement and evaluate a prototype of a multi-agent system using for example the agent programming language GOAL, available as open source software:
https://goalapl.atlassian.net/wiki/spaces/GOAL/overview
More information: https://people.compute.dtu.dk/jovi/MAS/
Optional participation in the GOAL-DTU team:
MAPC — Multi-Agent Programming Contest

Prerequisites

02156 Logical Systems and Logic Programming

Supervisor

Jørgen Villadsen

Prover Programming

Description Mathematical logic is used for the formalization of systems and results in computer science and mathematics. Provers are the main formalization technology and are often implemented in functional programming languages like F# or SML, or logic programming languages like ISO Prolog or Visual Prolog. Furthermore, proof assistants like Isabelle can formalize algorithms and logical inference systems, both abstractly and concretely.

The purpose of the project is to develop and evaluate a prototype of a prover for first-order logic, but higher-order logic or type theory can also be considered, and the prover can be automatic or interactive.

Prerequisites 02156 Logical Systems and Logic Programming

Supervisor Jørgen Villadsen

A Tour Guide for the Lambda Zoo

Description

Lambda calculus is the basis of functional programming. There are many ways to evaluate lambda calculus programs, and they lead to different properties such as lazyness or eagerness. Recent research has shown that evaluation strategies can be defined and combined algebraically, leading to a better understanding of their relationships and properties.
The purpose of the project is to develop a tool to help visualize and explain the different strategies and the possible combinations.
See also: https://bitbucket.org/pl-uwr/strategies/src/master/

Prerequisites

02157 Functional Programming

Supervisors

Jørgen Villadsen
Frederik Krogsdal Jacobsen (PhD Student)