Logic and problem solving artificial intelligence

ECTS
4 crédits

Hourly volume

Introducing

Objectives

This course is heterogeneous ; it is composed of 3 parts :
- Artificial Intelligence search algorithms for Problem Solving (AI-PS)
- Semantic Web (SW)
- Meta-heuristics (MH)

At the end of this module, students are expected to

[AI-PS]
Develop programs that implement
- A* algorithm for searching the best action plan in a problem-state space
- AO* Algorithm for searching the best problem decomposition graph
- Algorithms for 2-players games : minmax, negamax, alphabeta

[SW part]
Explain the major issues of the semantic web.
Implement the RDF graph model and its use for describing web resources and their metadata.
Design ontologies for knowledge representation, with the OWL language.
Develop an application that access to some ontologies and infers new knowledge through a reasoning.

[MH Part]
Be familiar with he main classes of discrete decision problems and optimization problems.
Implement three main classes of metaheuristics :
- Local search methods
- Evolutionary methods
- Hybrid methods

Necessary prerequisites

Algorithmics and programming
Logic for knowledge representation (1st order predicate calculus)

Tree search algorithms
Exact and approached methods (heuristics) for combinatorial optimization

Practical info

Location(s)

Toulouse