INSTITUT NATIONAL DES SCIENCES APPLIQUÉES LYON

DPT INFORMATIQUE
INFORMATIQUE APPRENTISSAGE
INSA Campus LyonTech - 7 Avenue Jean Capelle
Bâtiment Blaise Pascal - 69100 VILLEURBANNE

Knowledge Engineerin

A logical approach to artificial intelligence

IDENTIFICATION

CODE :	IFA-4-S1-EC-ALIA
ECTS :	2.0

HOURS

Lectures :	10.0 h
Seminars :	4.0 h
Laboratory :	12.0 h
Project :	0.0 h
Teacher-student contact :	26.0 h
Personal work :	25.0 h
Total :	51.0 h

ASSESSMENT METHOD

A 1.5h exam will test your knowledge (documents allowed).

The project on logic programming with PROLOG will be evaluated by groups of six students: you will provide the PROLOG code you wrote and will defend your project to an audience (teachers and other students): you will present, compare and discuss the different AI that you wrote (experimental validation).

TEACHING AIDS

All documents are available on MOODLE (http://moodle.insa-lyon.fr).

TEACHING LANGUAGE

French

CONTACT

M. BENTO Alexandre
alexandre.bento@insa-lyon.fr
MME CALABRETTO Sylvie
sylvie.calabretto@insa-lyon.fr

AIMS

This class aims at:

- Learn theroretical foundations of logic for Articicial Intelligence: Logic of propositions, logic of predicates (first order and superior orders), revisable logics, mulit-valued logics, modal logic.

- Learn resolution and inference techniques

- Be able to model/translate problems written in natural language into logical formulas

- Be able to solve these problems with classical or non standards reasoning using inference rules

- Be able to use a logical programming language like PROLOG for modeling and solving Artificial Intelligence problems

The programming project consists in developing several Artificial Intelligence for 2-player games (reversi, chess, ...)

CONTENT

- State of the logic.
- Logic of propositions.
- Logic of predicates (first order).
- Logic of predicates (superior orders).
- Revisable logics / non-monotonous.
- Multi-valued Logics.
- Modal Logics, Alethic logic, temporal logic, epistemic logic.
- Introduction to Logic Programming.
- Introduction to PROLOG language.

BIBLIOGRAPHY

LOGIC
[1] Nilsson N. Principes d'Intelligence Artificielle. Cepadues, Toulouse
[2] Laurière J.C. Intelligence Artificielle, II, Représentation des Connaissances. Eyrolles
[3] Dubois & Prade. Théorie des Possibilités. Masson, 1985
[4] Pabion. Logique. Paris : Hermann; 1976
[5] Thayse et coll. Approche logique de l'Intelligence Artificielle. Dunod Informatique, 1990
[6]Tong-Tong J.R. La logique floue. Hermès, 1995

PROLOG
[7] Blackburn P., Bos J., Striegnitz K. Learn PROLOG now! Volume 1, 2007
[8] Nilsson U. and Maluszynski J. Logic, programming and PROLOG, 1995
[9] http://www.learnprolognow.org

PRE-REQUISITE

IFA-3-AAIA

INSA LYON
Campus LyonTech La Doua
20, avenue Albert Einstein - 69621 Villeurbanne cedex - France
Phone +33 (0)4 72 43 83 83 - Fax +33 (0)4 72 43 85 00
www.insa-lyon.fr