Faculty of Applied Sciences

INGI2262 — artificial intelligence: learning and recognitiopn

[30h+30h exercises] 5 credits

This course is taught in the 1st semester

Teacher(s):	Yves Deville, Pierre Dupont (coord.), Marco Saerens
Language:	English
Level:	Second cycle

Aims

- To understand and apply standard techniques to build computer programs that automatically improve with experience
- To assess the quality of a learned model for a given task
- To assess the relative performance of several learning algorithms
- To justify the use of a particular learning algorithm given the nature of the data, the learning problem and a relevant performance measure
- To use, adapt and extend learning software

Main themes

- Leaning as search, inductive bias
- Combinations of decisions
- Loss function minimization, gradient descent
- Performance assessment
- Instance-based learning
- Probabilistic learning
- Unsupervised classification

Content and teaching methods

- Concept learning, Generalization as Search, Version Space
- Decision trees
- Multilayer Perceptrons
- Quality measures, Confidence intervals, Hypothesis testing
- K-Nearest Neighbors
- Bayesian Learning, Naïve Bayes
- Clustering techniques

Teaching method: lectures (theory), simulations on real data, extensions of learning software, problem based learning

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

- Prerequisites:
(1) SINF1121 or equivalent
(2) Basic knowledge in probability and statistics (BIR1203, BIR1304 or equivalent)
- Reference book:
Machine Learning, Tom Mitchell, McGraw Hill, 1997
- Evaluation:
Written exam
-Remarque:
WEB site: http://www.info.ucl.ac.be/notes_de_cours/INGI2262/

Other credits in programs

FSA3DS/IN	Diplôme d'études spécialisées en sciences appliquées (informatique)	(5 credits)	
INFO22	Deuxième année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	Mandatory
INFO23	Troisième année du programme conduisant au grade d'ingénieur civil informaticien	(5 credits)	