



Faculty of Applied Sciences

INGI2262 artificial intelligence: learning and recognition

[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

- Learning 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) INGI 2261 Artificial Intelligence: representation and reasoning
 - (2) Basic knowledge in probability and statistics

- 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/

Programmes in which this activity is taught

ECGE3DS/IG	Diplôme d'études spécialisées en économie et gestion (informatique de gestion - Master in Information Systems)
INFO2	Ingénieur civil informaticien
LINF2	Licence en informatique

Other credits in programs

ECGE3DS/IG	Diplôme d'études spécialisées en économie et gestion (informatique de gestion - Master in Information Systems)	(5 credits)	Mandatory
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)	
LINF22	Deuxième licence en informatique	(5 credits)	
LINF22/GN	Deuxième licence en informatique (informatique générale)	(5 credits)	