UCLouvain

mlsmm2154 — Artificial Intelligence

2026

5.00 crédits	30.0 h	Q2

Enseignants	Saerens Marco ;
Langue d'enseignement	Anglais > Facilités pour suivre le cours en français
Lieu du cours	Mons
Préalables	· Programming in Python · Elementary probability and statistics · Mathematics (analysis, optimisation, matrix theory)
Thèmes abordés	Nowadays, the volume of data generated, for instance by internet and social networks, is constantly increasing. In this context, there is a need for efficient ways to infer useful information from those data, which can take different forms depending on the situation. Numerous applied statistics, data mining, machine learning and pattern recognition algorithms were developed to extract and transform information for different, concrete, applications. This course delves into more advanced and emerging methods (complementary to the ones presented in MLSMM2151 'Data Science'), emphasizing on artificial intelligence-related (AI; especially machine learning) techniques, like, i.e., reinforcement learning, fairness in supervised classification, analysis of sequential data for gesture recognition, neural networks or graph-based methods, as key areas of exploration. Designed to adapt annually, the content of the course could change from year to year and will be discussed during the first lecture.
Acquis d'apprentissage	**A la fin de cette unité d'enseignement, l'étudiant est capable de :** With respect to the LSM competency framework. This course contribute to acquiring the following competencies: <u>Knowledge and reasoning</u> · Mastery of the core knowledge for each area of management. · Ability to communicate one's acquired knowledge from the various areas of management. · Ability to properly apply one's acquired knowledge in order to solve problems. <u>A scientific and systematic approach</u> 1 · Clear, structured, analytical reasoning based on applying, and if needed adapting, scientifically-based conceptual frameworks and models to define and analyse a problem. · Collecting, selecting and analysing relevant information using rigorous, advanced and appropriate methods. At the end of this course, the student will be able to: · Understand and describe the main methods used in Machine Learning. · Apply dimensionality reduction techniques, when required. · Determine the most relevant methods to use for a given learning problem. · Apply those methods on real-life learning problems.
Bibliographie	Recommended books : BISHOP C., Pattern Recognition and Machine Learning, Springer, 2006. DUDA R., Patter Classification (second edition), Wiley, 2001. ALPAYDIN E., Introduction to Machine Learning, 2nd Ed., The MIT Press, 2009. THEODORIDIS S., Machine Learning : A Bayesian and Optimization Perspective, Academic Press, 2015. SUTTON R., Reinforcement Learning : An introduction, The MIT Press, 1998.
Faculté ou entité en charge:	CLSM

Programmes / formations proposant cette unité d'enseignement (UE)

Intitulé du programme	Sigle	Crédits	Prérequis	Acquis d'apprentissage
Master [120] : ingénieur de gestion	INGE2M	5		
Master [120] : ingénieur de gestion	INGM2M	5		
Master [120] en sciences de gestion (en alternance)	GESA2M	5		