



UNIVERSITÀ DI PAVIA

Anno Accademico 2021/2022

ARTIFICIAL INTELLIGENCE

Anno immatricolazione	2020/2021
Anno offerta	2021/2022
Normativa	DM270
SSD	ING-INF/05 (SISTEMI DI ELABORAZIONE DELLE INFORMAZIONI)
Dipartimento	DIPARTIMENTO DI INGEGNERIA INDUSTRIALE E DELL'INFORMAZIONE
Corso di studio	COMPUTER ENGINEERING
Curriculum	Computer Science and Multimedia
Anno di corso	2°
Periodo didattico	Primo Semestre (27/09/2021 - 21/01/2022)
Crediti	6
Ore	45 ore di attività frontale
Lingua insegnamento	English
Tipo esame	ORALE
Docente	PIASTRA MARCO (titolare) - 6 CFU
Prerequisiti	Basic mathematical skills, practical knowledge of at least one programming language.
Obiettivi formativi	The course follows a conceptual pathway along the fundamental principles of the discipline. It is divided into two parts: the first part is an introduction to classical formal logic, both propositional and first order, with a special focus to the aspects of automatic calculus, while the second part is an introduction to the basic principles of machine learning from a probabilistic perspective.
Programma e contenuti	1) Classical logic and automated symbolic reasoning Boolean algebras Logical language and semantical structures: logical consequence

Deductive systems for propositional logic
Decision problems and decidability
Predicates and relations: first order logic
Semi-decidability of first order logic
First-order resolution with unification

2) Machine Learning

Logic and probability: representation or statistics?
The language of probability: representation
Bayesian inference
Graphical models and automation
Probabilistic learning
Clustering: K-means, EM algorithm, missing data.
Causal models, probabilistic and structural.
Reinforcement Learning.

Metodi didattici

Lectures (hours/year in lecture theatre): 4.5
Practical class (hours/year in lecture theatre): 0
Practicals / Workshops (hours/year in lecture theatre): 0

Testi di riferimento

See the home page of the course (<http://vision.unipv.it/AI>) for lecture slides, suggested readings and software for the exercises.

Modalità verifica apprendimento

The final exam is an interview about the theory, together with the discussion of practical activities shown during lessons.

Altre informazioni

Obiettivi Agenda 2030 per lo sviluppo sostenibile

[Gli obiettivi](#)