UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Artificial Intelligence

2324-2-F9201P033

Aims

The aims of the course concern theoretical, methodological, and practical issues related to the area of Artificial Intelligence (AI); in particular the course:

- is aimed at supplying basic knowledge necessary to avalyse and evaluate the applicability of existing AI solutions to specific problems;
- is aimed at discussing methodological issues related to the application of AI techniques to specific domains and contexts of application;
- is aimed at presenting some specific technical and technological soluzions for experimentation by the students.

Contents

The course will present an historical introduction to the discipline, then it will focus on selected contribution in the area of the so-called symbolic AI, with specific reference to ontologies and languages, standards, and technologies of the Semantic Web. Finally, selected contributions of the so-called sub-symbolic AI will also be discussed, with specific reference to data analysis techniques (clustering).

Detailed program

- Historical introduction of AI
- Symbolic AI
    - Brief introduction to basic concepts
    - Semantic Web introduction

    - efining knowledge graphs with RDF, RDFS
    - Querying knowledge graphs with SPARQL
    - Enabling tools: DBPedia, WikiData, Protegé*
- Sub-symbolic AI
    - Brief introduction to basic concepts
    - Data analysis with AI techniques
    - Classification
    - Clustering
    - Enabling tools: OpenRefine, KNIME

Prerequisites

No particular prerequisite. Basic mathematics, statistics, computer programming proficiencies could be useful to understand the discussed topics and to implement the optional project for the final assessment. It is mandatory the interest and intention to experiment even in a very practical way innovative informatics technologies.

Teaching form

Theoretical and methodological aspects will be presented along with practical examples and case studies, employed to exemplify the introduced topics; specific tools for the realization of presented models and approaches will be presented; suitable references to the relevant and recent scientific literature will be given for supporting an in depth study of the treated topics. The course is in Italian although the teaching material is mostly in English.

Textbook and teaching resource

Slides, papers and selected additional material, selected chapters from reference books, among which Artificial Intelligence: Foundations of Computational Agents, 2nd Edition, David L. Poole and Alan K. Mackworth (https://www.artint.info/2e/html/ArtInt2e.html).

Semester

First semester

Assessment method

Written and optional oral examination on topics discussed during the course; knowledge about concepts, techniques, issues discussed in the course, as well as the ability to solve exercises proposed, and the ability to choose solutions based on their appropriateness to the context of the problem will also be evaluated. The ability to convey knowledge and abilities in a compact and effective way will be appreciated. An optional group project (2-3 members) will be proposed; a single possibility to carry out the project will be defined, plausibly close to the end of

the course, with assignment due in the months of January/February. It could lead to extra points for the final evaluation, provided the project is discussed.

Office hours

Wednesday morning, by appointment, potentially also via teleconferencing systems.

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE