UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Big Data in Public and Social Services

2223-2-F9101Q032-F9101Q033M

Aims

The laboratory aims at providing technical competences in the implementation of complex data pre-processing pipelines for both structured and unstructured data. To this end, state-of-the-art tools and algorithms will be applied to real-life data. The laboratory would also provide technical competences for modelling and realising NoSQL data models, with a special focus on Graph-data models

Contents

Getting knowledge from data

Modelling and Querying the Resulting knowledge

Data visualisation & Decision Making

Detailed program

1. **Getting knowledge from data**
2. **Word Embedding (Word2Vec, Doc2Vec,GLOVE, FastText, StarSpace)**
3. **Evaluate word embedding models (intrinsic vs extrinsic evaluation)**
4. **Topic Modelling through Python**

5. **Modelling and Querying the Resulting knowledge**
6. **introduction to SNA metrics**
7. **graph-databases and graph-traversal query languages (Cypher)**
8. **Explainable AI (global and local interpretation models)**
9. **Data visualisation & Decision Making**
10. **Data visualisation paradigms and models (D3js, GraphViz, Gephi, Tableau)**

Prerequisites

None

Teaching form

The course will be provided by means of lessons, laboratory sessions and homeworks.

Textbook and teaching resource

Lectures with the support of slides, laboratory and real-life case studies. Scientific Papers and books indicated by the lecturer. The software used is either available as open source or through academic license.

Semester

II Semester

Assessment method

The assessment is based on a project and an oral exam. The project can be carried out individually or in groups.

The oral evaluation is focused on the student's ability to answer to specific questions by referring both to the theoretical and practical aspects (through examples) connected to the requested topic.

The project is mandatory for both attending students and non-attending students.

The oral exam is aimed at assessing the theoretical knowledge of the student on the topics of the course. The

ability to reason and deepen the issues proposed during the examination and the methodological rigor of their development will be evaluated.

Office hours

By appointment

Sustainable Development Goals