UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

SYLLABUS DEL CORSO

Laboratorio 2

2526-2-F8802N074

Learning objectives

Understand the challenges and opportunities of Big Data; Acquire knowledge of European regulations and ready to use tools regarding the collection and use of digital traces; Use machine learning models for data analysis; Integrating Artificial Intelligence into social research.

Contents

Definition and uses of Big Data; GDPR and DSA applied to digital data collection in the European context; introduction to machine learning trough Weka and Teachable Machine; Introduction to applications of large language model APIs such as GPT and Claude in different social research tasks.

Detailed program

Lesson 1, December 1, 2025, 2:30 PM - 6:30 PM: What Big Data Are and What They Are For
Main topics:
Definition and characteristics of Big Data (volume, variety, velocity, veracity, value).
Challenges associated with Big Data: management, quality, and privacy.
Activities:
Ready-to-use online tools for Big Data Analytics.

Lesson 2, December 12, 2025, 2:30 PM - 6:30 PM: Data Collection and the Digital Services Act
Main topics:
Regulations for accessing and using data in the European context: from the General Data Protection Regulation (GDPR) to the Digital Services Act (DSA).

Methods for collecting digital traces data: sources and tools.
Activities:
Exercises in collecting digital traces using Zeeschuimer and Hyphe.

Lesson 3, December 15, 2025, 11:30 AM - 5:30 PM: Introduction to Machine Learning
Main topics:
Comparison between Weka Workbench and Teachable Machine models.
Advantages of open source tools versus closed commercial products.
Activities:
Exercises in classifying quantitative and qualitative data.

Lesson 4, December 17, 2025, 10:30 AM - 4:30 PM: Introduction to Large Language Model APIs
Main topics:
Overview of various Artificial Intelligence APIs using Replicate.
Activities:
Exercises in transcribing interviews with WhisperAI and analyzing texts using Claude.

Lesson 5, December 19, 2025, 10:30 AM - 2:30 PM: Final Project
Main topics:
Review of the topics covered during the lab course.
Implementation of a final project in small groups, hackathon style.
Activities:
Group work on designing and developing the final project and presenting it to the other participants.

Prerequisites

Basic programming concepts.

Teaching methods

The course is designed as a hands-on learning experience based on the 'learning by doing' principle. The teaching method will follow a 'flipped classroom' approach: readings will be carried out independently, while in class, we will discuss key concepts and guided exercises will be carried out.

Assessment methods

The evaluation will be based on active participation during lessons and the quality of the final project.

Textbooks and Reading Materials

Venturini, T., Rogers, R. (2025). Digital Methods: A Short Introduction. Polity Press.

Sustainable Development Goals

QUALITY EDUCATION