SYLLABUS DEL CORSO

Business Intelligence and Big Data Analytics

2425-2-FDS01Q037

Learning objectives

The course will cover both methodological and technical aspects necessary to understand and implement Business Intelligence (BI) and Big Data Analytics (BDA) solutions in real-world contexts. It will address the evolution of BI architectures, decision models based on business functions, and big data architectures such as data lakes and lakehouses. Additionally, the course will explore AI techniques for supporting decisions, including explainable AI (XAI) and conversational AI using word embeddings and large language models (LLMs). The course will provide the foundations to understand, evaluate, and implement BI and BDA solutions, as well as to comprehend the differences between the two.

Contents

1. Introduction to BI and Big Data Analytics
2. BI Architectures
3. Big Data Analytics
4. AI for supporting decisions

Detailed program

1. Introduction to BI and Big Data Analytics
   a. Goal and rationale of BI systems
   b. The value of knowledge – digital economy and data-driven decision making
   c. The Structure and subsequent evolution of BI and Big Data Analytics systems

2. BI Architectures

     a. The Evolution of BI Architectures (towards Big Data)
     b. Decision Models based on business functions and type of decisions

  3. Big Data Analytics
     a. Data lake and lakehouse
     b. Big data architectures to scale-out (pyspark)

  4. AI for supporting decisions
     a. Explainable and Evaluative AI
     b. Explainers (LIME, SHAP, Anchors, ContrXT...)
     c. Conversational AI and XAI via word embeddings and LLMs

Prerequisites

None

Teaching methods

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

Assessment methods

written examination

Textbooks and Reading Materials

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

Semester

I semester

Teaching language

English

Sustainable Development Goals

INDUSTRY, INNOVATION AND INFRASTRUCTURE