UNIVERSITÀ
DEGLI STUDI DI MILANO-BICOCCA

COURSE SYLLABUS

Social Media Analytics

2425-2-FDS01Q018

Aims

The course aims to provide students with the main concepts behind the management of data originated in social media (access, pre-processing, modeling) and their subsequent analysis. Students will be able, in particular, to collect, process and analyze data from major social media, using the most suitable technologies for the purpose. They will also be able to provide a representation of complex social structures in order to extract useful information from them.

Contents

1. Introduction to the Social Web;
2. Data in social media and related issues;
3. Representing complex social data structures: graph and network theory;
4. Social Network Analysis: metrics;
5. Social Network Analysis: algorithms for community detection in social networks;
6. Social Content Analysis: subjectivity and sentiment analysis, irony detection;
7. Social Content Analysis: Named Entity Recognition and Linking;
8. Visualization of data from social media and the analysis on such data.

Detailed program

1. Introduction

- The Social Web: introduction and related terminology: Social Web, Social Networks, Social Media, User-Generated Content (UGC);

- Different classes of social “information objects”: 1) texts: posts, blogs, microblogs, 2) images, 3) audios, 4) videos;
- Social Media Analytics: definition and objectives. The concepts of auto-presentation and auto-disclosure.

2. Data in social media

- Main social platforms, Advanced Programming Interfaces (API)s, the “crawling” process;
- Pre-processing and storing of social data;
- Hints of data collection issues, both legally (the GDPR) and technologically.

3. Social data representation

- Elementary and complex data structures;
- Representing social structures via a graph-based representation (graph theory, network topologies).

4./5. Social Network Analysis

- Link analysis, Web link analysis, and related metrics;
- Network clustering: community-detection algorithms;
- Influence and contagion in social media.

6./7. Social Content Analysis

- Introduction to concepts of Natural Language Processing in the context of social networks;
- Objectivity/subjectivity, polarity, emotion and irony in social networks;
- Lexical and Semantic Approaches;
- Named-entity Recognition and Linking.

8. Visualization of social media data: open issues and techniques

Prerequisites

Basic knowledge of the principles of linear algebra, statistics, programming.

Teaching form

- Lectures
- Laboratory exercises
- The course will be held in English

Textbook and teaching resource

- Rahman, Md Saidur. Basic graph theory. Springer, 2017.
- Reinhard Diestel. Graph Theory. Springer, 2017.
- Suliman Hawamdeh, Hsia-Ching Chang. Analytics and Knowledge Management. CRC Press. 2018.
- John Scott. Social Network Analysis. Sage, 2012.

- Bing Liu. Sentiment Analysis and Opinion Mining. Morgan & Claypool. 2016.
- Eneko Agirre, Philip Edmonds. Word Sense Disambiguation: Algorithms and Applications (Text, Speech and Language Technology). Springer. 2007.

Semester

First semester

Assessment method

Written exam with exercices and open questions.
The written test aims at the extensive and intensive evaluation of the theoretical and theoretical-practical skills acquired during the course.

Group project (with oral presentation).
The project aims to assess students' ability to translate the skills acquired during the course into real application fields, through the development and use of technological solutions for analyzing social media data.

- The written exam is assessed on a scale from 0 to 24.
- Students must obtain a grade of 12 or more in the written exam.
- The project, with relative oral discussion, is evaluated on a scale from 0 to 8.

The final grade will be given by the sum of the evaluation obtained in the written exam and by the evaluation related to the project.

Office hours

By appointment: Marco Viviani (marco.viviani@unimib.it)

Sustainable Development Goals

GOOD HEALTH AND WELL-BEING | GENDER EQUALITY | REDUCED INEQUALITIES