Study programme(s): Computer Science
Level: Bachelor of Science
Course title: Social Networks
Lecturer: Miloš Savić
Status: elective
ECTS: 4
Requirements: None

Learning objectives

The objective of the course is to introduce students to the theoretical concepts, techniques and tools for social network and media analysis.

Learning outcomes

Minimum: At the end of the course it is expected from a successful student to be capable of applying basic social network analysis techniques using existing tools to an illustrative example of a social network.

Desirable: At the end of the course it is expected from a succesful student to demonstrate the understanding of theoretical concepts and algorithms used in social network and media analysis, as well as their pratical application.

Syllabus

Theoretical instruction

Definition and examples of social networks. Elements of graph theory for social network analysis (graph types and representations). Metrics of connectivity, distance, centrality, cohesion and similarity for actors and ties in social networks. Algorithms for components, cores and cliques in social networks. Structure and evolution of social networks. Structural equivalence and basic community detection algorithms. Signed social networks and structural balance. Visualization of social networks. Introduction to advanced topics (social influence analysis, computational models of trust and reputation, expert finding in social networks, privacy-preserving social network analysis, social media content analysis and sentiment mining, recommendation in social media, etc.).

Practical instruction

Acquaintance with social network analysis and visualization tools (Gephi and Pajek) and Java libraries (Jung). Analysis of study examples using mentioned tools and libraries. Introduction to social media APIs and related Java libraries. Practical programming problems related to collecting, analyzing and visualizing social media content.

Literature

Recomended

1. D. Easley, J. Kleinberg. *Networks, Crowds and Markets: Reasoning About a Highly Connected World*. Cambridge University Press, 2010.
2. M. E. J. Newman. *Networks: An Introduction*. Oxford University Press, 2010.
3. W. de Nooy, A. Mrvar, V. Batagelj. *Exploratory Social Network Analysis with Pajek*. Cambridge University Press, 2005.
4. Charu C. Aggarwal (Ed.). *Social Network Data Analytics*. Springer US, 2011.
5. Shamanth Kumar, Fred Morstatter, Huan Liu. *Twitter Data Analytics*. Springer-Verlag New York, 2014.

Weekly teaching load

Lectures: 2	Exercises:	Practical Exercises: 2	Student research:	Other:

Teaching methodology

Lectures are held using classical presentation methods involving a projector. During exercises classical teaching methods involving a projector are used to analyze study examples. Also, study examples are practiced on the computer, through acquaintance with the use of recommended tools and libraries. Student's knowledge is checked through a written test, solutions of practical problems, and preparation of a seminar paper that is defended at the end of the course.

Grading method (maximal number of points 100)

Pre-exam oblications	points	Final exam	points
Test	20	Seminar paper	50
Practical problems	30		