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INTERSOCIAL: Unleashing the Power of Social Networks for Regional SMEs

Deliverables D5.2.1: Course on Social Networking

Action 5.2: New Course on Social Networking

WP5: Training and Knowledge Transfer

Priority Axis 1: Strengthening competitiveness and innovation
Specific Objective 1.2: Promoting cross-border advanced new technologies

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Course on Social Networking

Deliverable D5.2.1 Action 5.2

Workpackage WP5: Training and Knowledge Transfer

Responsible Partner:	UOI (LP)		
Participating Partner(s):			
SAT:	APCE (P4)		
WP / Task No.:	WP4	Number of pages:	7 (not including the slides)
Issue date:	2013/10/14	Dissemination level:	Public

Purpose: Preparing and offering a course on social networking.
Results: UOI has prepared a course on social networking. The course covers various aspects of social networks, including network models, measurements, link analysis and information propagation. The course has been offered as a graduate course at the Computer Science and Engineering Department of the University of Ioannina, Greece.
Conclusion: The material in this deliverable includes slides of a graduate course on social networks.

Approved by the project coordinator: Yes
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Document history

When	Who	Comments
2013/10/14	Evaggelia Pitoura, Panayiotis Tsaparas	Initial version
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Introduction

The recent popularity of micro blogging and instance messaging services (such as Twitter), social networking sites (such as Facebook), photo and video sharing sites (such as Instagram, YouTube and Flickr), blogging platforms and many others have revolutionize all aspects of everyday life including social interactions, businesses, education and entertainment. From a computer science perspective, the ever increasing employment of social networks has resulted in unprecedented amounts of data and has opened up opportunities for new research in their storage, processing and analysis.

The course covers issues regarding the structure and analysis of large social and information networks as well as models that abstract their basic properties. Topics include among others methods for link analysis, diffusion and information propagation, and event detection.

A version of this course has been offered as a graduate course in the Computer Science and Engineering Department of the University of Ioannina, Greece during the Academic Years 2012-2013 and 2013-2014.

There is no official text for this course. The following books are recommended as optional reading:

- Networks, Crowds, and Markets: Reasoning About a Highly Connected World by David Easley and Jon Kleinberg. (the book is available online)
- Networks: An introduction by Mark Newman. SIAM Reviews, 45(2): 167-256, 2003

Course Organization

The course is organized in the following 13 lectures.

Lecture 1 offers an introduction to social networks and to the course content as well as a short graph theory reminder.

Lecture 2 focuses on network measurements including centrality measures, degree distributions and the clustering coefficient.

Lecture 3 presents models of social networks that abstract their basic characteristic including models that capture their evolution.

Lecture 4 covers strong and weak ties and the notion of betwenness.

Lecture 5 focuses on surrounding contexts covering issues such as homophily and affiliations.

Lecture 6 introduces navigation in small worlds.

Lecture 7 covers the structural balance theory in the case of positive and negative relationships.

Lecture 8 introduces the topic of information cascades.

Lecture 9 deals with epidemics and influence including the SIR and SIS models and percolation theory.

Lecture 10 focuses on influence maximization.

Lecture 11 covers link analysis and web search including random walks, the PageRank and HITS algorithms and their variations.

Lecture 12 presents the fundamentals of link prediction.

Lecture 13 focuses on using content from online social networks and media to predict stock changes, track earthquakes, and understand news cycles.

Appendix A

Slides for the lectures

References

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