

Daniel Smilkov

Research Centre for Energy, Informatics and Materials
Macedonian Academy of Sciences and Arts
Bul. Krste Misirkov 2, P.O. Box 428
1000 Skopje, Republic of Macedonia

Cell: +389 76 26 33 29
Email: [dsmilkov\(_@_\)cs.manu.edu.mk](mailto:dsmilkov(_@_)cs.manu.edu.mk)
Page: cs.manu.edu.mk/people/dsmilkov

Position held

Researcher
Macedonian Academy of Sciences and Arts, Skopje, Macedonia
Research Centre for Energy, Informatics and Materials
September 2010 - Now

Education

M.Sc. Computer Science (2009 - April 2011)

Faculty of Electrical Engineering and Information Technology, Skopje
Dissertation:

Original title: Reference models in complex networks

Subtitle: Rich-club and page-club coefficients for directed graphs.

Short description: Introduced two new coefficients: rich-club and page-club coefficients and their reference models for directed graphs. These coefficients are used to measure the dominance of an oligarchy of rich and mutually communicating entities. We compute these coefficients for four directed real-world networks and present some interesting results.

Advisor: Acad. Prof. Ljupco Kocarev

GPA: 9.89/10.00

B.Sc. Computer Science (2005-2009)

Faculty of Electrical Engineering and Information Technology, Skopje
Dissertation:

Original title: Building a scalable web crawler and near-duplicate detection problem

Short description: Implemented a multi-threaded web crawler in Java. Implemented an algorithm for near-duplicate web page detection.

Advisor: Acad. Prof. Ljupco Kocarev

GPA: 9.85/10.00

Research interests

- Mining and modeling large real-world social, technological and biological networks; their topology, evolution and dynamics
- Machine learning

Experience

Research Intern at [IBM Research](#), T.J. Watson, NY (Jan 2010-Sept 2010) [8 months]

Worked at Distributed Digital Media Infrastructure group managed by Dr. Chai Wah Wu on routing algorithms in P2P video conferencing. Published a prototype P2P videoconferencing software on IBM's internal website. Coauthored 2 papers on IEEE ISM conference 2010/11.

Junior Researcher at Maced. Acad. of Sci. and Arts, Skopje (Sept 2010-Now)

Research projects:

FP-7, [SUMO](#) - Super Modeling by combining imperfect models

A new combination of insights from climate science, nonlinear dynamical systems, and machine learning to model climate changes

FP-6, [MANMADE](#) - Diagnosing vulnerability and volatility in manmade networks

Mathematical methods for understanding dynamics of networks that comprise Europe's critical infrastructure; concentrating primarily on energy supply, emergency response systems and subsidiary key infrastructures

www.time.mk / www.times.si

News aggregator website (like Google news) founded by Igor Trajkovski (ex-Gogler)

Ranked 1st by number of visits in Macedonia

My part was the news content extraction

Software Intern at [Netcetera AG](#), Skopje, Macedonia (Summer 2008)

One of the top Swiss software companies with offices also in Skopje. Implemented an event notification system in Java, client-server architecture.

Publications **Working papers**

1. W. Wiegink, **D. Smilkov**, A. Stanoev and L. Kocarev, "Cooperative phenomena in networks of different oscillators"

Journals

1. **D. Smilkov** and L. Kocarev, "[Influence of the network topology on epidemic spreading](#)", **Physical Review E** (2012) [**accepted**]
2. **D. Smilkov** and L. Kocarev, "[Analytically solvable processes on networks](#)", **Physical Review E** 84, 016104 (2011)
3. A. Stanoev, **D. Smilkov** and L. Kocarev, "[Identifying communities by influence dynamics in social networks](#)", **Physical Review E** 84, 046102 (2011)
4. **D. Smilkov** and L. Kocarev, "[Rich-club and page-club coefficients for directed graphs](#)", **Physica A**, 389(11), pp. 2290-2299 (2010)
5. D. Trpevski, **D. Smilkov**, I. Mishkovski and L. Kocarev, "[Vulnerability of labeled networks](#)", **Physica A**, 389(23), pp. 5538-5549 (2010)

Conferences (work while at IBM Research)

1. H. Zhao, **D. Smilkov**, P. Dettori, J. Nogima, F. Schaffa, P. Westerink and C. W. Wu, "[A Feasibility Study Of Collaborative Stream Routing In Peer-to-Peer Multiparty Video Conferencing](#)", The IEEE International Symposium on Multimedia (**ISM2011**), USA
2. **D. Smilkov**, H. Zhao, P. Dettori, J. Nogima, F. Schaffa, P. Westerink and C. W. Wu, "[Non-intrusive Adaptive Multi-Media Routing in peer-to-peer Multi-Party Video Conferencing](#)", The IEEE International Symposium on Multimedia (**ISM2010**), Taiwan

Contest and awards

Algorithm competitions

[CodeFu](#) Seasonal, Winter 2009, 1st place

Won an iPod

[CodeFu](#) Annual 2007, 3rd place

Won ticket to Jazoon, International Java conference in Zürich along with full coverage of transportation, hotel, food.

Participation in ACM South-Eastern European Region, 2008, Bucharest, Romania

Scholarships

Government scholarship for talented university students (2005-2009)
Government scholarship for talented graduate students (2009-2011)

Coding skills

Java, Python, C/C++, Matlab, (X)HTML, CSS, Javascript, PHP, SQL and non-SQL databases.

[updated: 12 Jan 2012]