Tomislav Šmuc – Curriculum Vitae

Laboratory for Machine Learning and Knowledge Representation
Division of electronics
Rudjer Bošković Institute
Bijenička 54, Zagreb, Croatia
Phone: +385 1 4561 085
Mail: smuc at irb.hr; WEB: http://www.irb.hr/eng/People/Tomislav-Smuc
Publications (last 10 years): http://bib.irb.hr/lista-radova?autor=136501&period=2007
Google Scholar: https://scholar.google.com/citations?user=kuxxEikAAAAJ&hl=en
(**GS**: 3700+ citations; h-index: 22; **WoS:** 2100+ citations, h-index: 16)
ORCID: https://orcid.org/0000-0002-9185-9384

CURRENT RESEARCH INTERESTS

Machine Learning & Data mining	Rule learning, ensemble based machine learning, redescription mining, information and model fusion
Applications (DM&ML)	**biology, genomics&proteomics**: improving/interpreting experimental data, multi-label annotation of genes and organisms;information fusion for gene function prediction, microbial phenotype prediction; **drug discovery:** Modeling compound activities and mechanism of action – drug discovery **economics and finance:**, impact of media on financial indicators; **complex systems** & **networks**: spreading processes on networks, detection of source of spreading in networks, modeling influence in networks.

EDUCATION

1994	Faculty of Electrical Engineering (FEE)–University of Zagreb (UoZ); Phd in Nuclear Engineering; Thesis:"Stochastic Method For Loading Pattern Optimization of Pressurized Water Reactor"
1986 – 1991	FEE-UoZ; MSc in Nuclear Engineering
1981 – 1986	FEE-UoZ; BSc in Nuclear Engineering

EMPLOYMENT HISTORY

2017 -	RBI, Senior scientist with tenure, Head of Laboratory (2016-)
2012 - 2017	RBI, Senior scientist, Head of Division of electronics (2012 - 2016)
2006 - 2011	Senior research associate, Head of Division of electronics
2000 – 2005	RBI, Research associate
1998 – 1999	IRI - TU DELFT; Post-doctoral researcher
1986 – 1998	RBI, Research assistant (1986 - 1994), Senior research assistant (1994-1998)

INSTITUTIONAL RESPONSIBILITIES

- Head of Division of electronics (2006-2016)
- Leading Institute's Committee for Computing and Communications (2003-2007)
- Adviser to the Director for collaboration with industry (2005-2009)
- Assistant Director for International Cooperation and Projects at RBI (2015-2016)
- Member of the Scientific Council of RBI (2006-2016)
- Member of the Board of Governors of RBI (2016-)

RECENT RESEARCH PROJECTS (LAST 5 YEARS)

Croatian Science Foundation

2014-2017	Machine Learning Algorithms for Insightful Analysis of Complex Data Structures**; WP Leader**

Ministry of Science and Education (Croatia)

2017-2022	**DATACROSS** – project of the Center of Research Excellence in Data Science and Advanced Cooperative Systems, **Research area leader**
2017-2022	**Bioprospecting of Adriatic Sea** – project of the Center of Research Excellence in Bioprospecting, **Research task leader**

EU FP projects:

2012-2014	**FOC-II; FP7-FET;** (172,000EUR); **RBI group leader**
2013-2016	**MultiPlex; FP7-FET**;(300,000EUR); **RBI group leader**
2013-2016	**InnoMol – FP7 REGPOT**; (RBI ~4.8MEUR, >30 RBI staff); **Collaborator**
2014-2017	**MAESTRA – FP 7 FET** (260,000EUR); **WP leader**

SUPERVISION OF JUNIOR RESEARCHERS

MSc students
Jurica Levatić (2011)
Patrik Đurđević (2012)
Dino Malpera (2012)
Josip Šumečki (2012)
Ana Paliska (2017)
Filip Milinković (2017)
Andrea Stanić (2018)
Tin Mavračić (2018)
Dinko Ždravac (2018)

PhD students
Krešimir Trontl (2004-2008)
Fran Supek (2005-2010)
Nino Antulov Fantulin (2011-2015)
Matej Mihelčić (2013-2018)
Matija Piškorec (2014-)
Davor Oršolić (2018-)

TEACHING ACTIVITIES

Faculty of Mathematics, PMF, University of Zagreb
(2010-) Machine Learning, Masters students' course, (**2008-2010) Introduction to AI**, Masters students' course

MEMBERSHIP IN EVALUATION PANNELS & REVIEWING

Search committees (external): WASP program – Sweden (2017); **Project proposals**: ERC remote reviewer (2017); National Science Centre - Poland (2013-2017); **Journals (reviewing) :** Data Mining and Knowledge Discovery, Machine Learning, Jrn. Int. Inf. System, Scientific Reports, PlosOne, Plos Computational Biology, Bioinformatics; **Conferences (reviewing):** ECML-PKDD, Discovery Science

ACTIVE MEMBERSHIPS IN SOCIETES

- ENS – European Nuclear Society; HNS – Croatian Nuclear Society
- ISCB – International Society for Computational Biology

ORGANIZATION OF CONFERENCES & WORKSHOPS

- ECML-PKDD (2016-2017), Discovery Science (2016), **Program committee member**
- ECML-PKDD 2017, PhD Forum; **Co-chair**
- Summer school "Mining Big and Complex Data", Ohrid, Macedonia, 2016**, Organizer and lecturer;** Summer school on Data Science 2016, 2017, Split. **Co-chair;** 2018 **- Program chair**
- ECML-PKDD 2011, Discovery challenge; **Organizer & workshop chair**
- ECML-PKDD 2003, **Local chair**

REPRESENTATIVE PUBLICATIONS(LAST 10 YEARS)
(QUARTILE + WOS CITATIONS)

1.1 Matija Piškorec, Nino Antulov-Fantulin, Petra Kralj Novak, Igor Mozetič, Miha Grčar, Irena Vodenska, **T. Šmuc** (2014), Cohesiveness in Financial News and its Relation to Market Volatility***, Scientific Reports*****,** http://dx.doi.org/10.1038/srep05038**; (Q1);Citations: 8**

1.2 N. Antulov-Fantulin, **T. Šmuc**, A. Lančić, H. Štefančić, M. Šikić, (2015) Identification of patient zero in static and temporal networks - robustness and limitations, ***Phys. Rev. Lett***., 114(24), 248701.**; (Q1); Citations: 19.**

1.3 M. Mihelčić, N. Lavrač, S. Džeroski, **T. Šmuc**, (2017) A framework for redescription set construction, ***Expert Systems With Applications*** 68 196–215. **(Q1); Citations: 5**

1.4 M. Mihelčić, S. Džeroski, N. Lavrač, **T. Šmuc**, (2017) Redescription mining augmented with random forest of predictive clustering trees, ***Journal of Intelligent Information Systems***, 1-34. doi:10.1007/s10844-017-0448-5, **(Q3); Citations: 1**

1.5 M. Mihelčić, G. Šimić, M. L. Babić, N. Lavrač, S. Džeroski**, T. Šmuc** (2017) Using redescription mining to relate clinical and biological characteristics of cognitively impaired and Alzheimer's disease patients. ***PLOS ONE*** 12(10), **(Q1); Citations: 2**.

1.6 M. Mihelčić, T. Šmuc, (2018), Targeted and contextual redescription set exploration, ***Machine Learning***, https://doi.org/10.1007/s10994-018-5738-9

1.7 V., Vidulin, T. Šmuc, S. Džeroski, F. Supek, The evolutionary signal in metagenome phyletic profiles predicts many gene functions, ***Microbiome*** (2018) 6:129, https://doi.org/10.1186/s40168-018-0506-4

1.8 V Vidulin, **T Šmuc**, F Supek, (2016). Extensive Complementarity between Gene Function Prediction Methods, ***Bioinformatics***, 1367-4803. (**Q1); Citations: 3**

1.9 M Brbić, M Piškorec, V Vidulin, A Kriško, **T Šmuc** and F Supek, (2016), The landscape of microbial phenotypic traits and associated genes, ***Nucleic acids research*** (0305-1048) (**Q1); Citations: 16**

1.10 P. Radivojac et al., (2013) A large-scale evaluation of computational protein function prediction; ***Nature Methods*** 10(3):221, **(Q1); Citations: 366**

1.11 Škunca N, Bošnjak M, Kriško A, Panov P, Džeroski S, **Šmuc T**, Supek F. (2012). Phyletic Profiling With Cliques of Orthologs Is Enhanced by Signatures of Paralogy Relationships, ***PLoS Computational Biology***. **(Q1); Citations: 18**.

1.12 Supek F, Bošnjak M, Škunca N, **Šmuc T,** (2011), REVIGO summarizes and visualizes long lists of Gene Ontology terms , ***PloS One***, (7):e21800. doi:10.1371/journal.pone. **(Q1); Citations 1371)**