

TIJANA MILENKOVIĆ: CURRICULUM VITÆ

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Citizenship: Croatian

RESEARCH INTERESTS

Computational and systems biology: algorithms for analyzing and modeling molecular and cellular networks.

Proteomics: interplay between network structure, biological function, and disease in protein-protein interaction networks.

Synthetic biology: drug discovery and design.

EDUCATION

Ph.D., Computer Science, University of California, Irvine, 2006–present.

Admitted to Ph.D. candidacy in July 2008.

ADVISOR: Prof. Nataša Pržulj.

CGPA: 3.97 out of 4.

M.Sc., Computer Science, University of California, Irvine, June 2008.

THESIS TITLE: *Interplay of topology and biology in protein-protein interaction networks.*

ADVISOR: Prof. Nataša Pržulj.

CGPA: 3.95 out of 4.

**B.Sc., Electrical Engineering, Information and Computer Science, Nov. 2005.
University of Sarajevo, Bosnia and Herzegovina.**

THESIS TITLE: *M-Commerce.*

ADVISOR: Dženana Djonko.

CGPA: 8.7 out of 10.

AWARDS AND DISTINCTIONS

Winner of McGaugh Hall Display Case Design Challenge, Center for Complex Biological Systems, University of California, Irvine, 2008.

Chair's Fellowship, Donald Bren School of Information and Computer Sciences, University of California, Irvine, 2006–2010.

Semifinals (world's top 30) of Microsoft Imagine Cup, 2005.

2nd Place at the Balkan Case Challenge Finals, Information and Communication Technology Case, 2004/2005.

1st Place at the Balkan Case Challenge, Bosnia and Herzegovina Sub-competition, Information and Communication Technology Case, 2004/2005.

Scholarship from JP Elektroprivreda, Sarajevo, Bosnia and Herzegovina, 2001–2005.

Ministry of Education and Science Scholarship, Sarajevo, Bosnia and Herzegovina, 1999–2001.

HKD Napredak Scholarship, Sarajevo, Bosnia and Herzegovina, 1996–1999.

PROFESSIONAL POSITIONS

2007–present: Research Assistant and Graduate Student Researcher, UCI.
2007–2009: Substitute Instructor, Teaching Assistant, and Reader, UCI.
2006: Expert System Developer, JP Elektroprivreda, Sarajevo, Bosnia and Herzegovina.
2005: Conference Assistant, United Nations Development Programme (UNDP), Sarajevo, Bosnia and Herzegovina.

CONTRIBUTIONS TO RESEARCH AND DEVELOPMENT

REFEREED JOURNAL PUBLICATIONS:

- J-8 H. Ho[†], **T. Milenković**[†], V. Memišević, J. Aruri, N. Pržulj, and A.K. Ganesan, “Protein Interaction Network Topology Uncovers Melanogenesis Regulatory Network Components Within Functional Genomics Datasets”, *submitted*, 2009.
[†]These authors contributed equally to this work.
- J-7 V. Memišević, **T. Milenković**, and N. Pržulj, “An integrative approach to modeling biological networks”, arXiv:0906.0125v1 [q-bio.MN], *submitted*, 2009.
- J-6 O. Kuchaiev[†], **T. Milenković**[†], V. Memišević, W. Hayes, N. Pržulj, “Topological network alignment uncovers biological function and phylogeny”, arXiv:0810.3280v3 [q-bio.MN], *submitted*, 2009.
[†]These authors contributed equally to this work.
- J-5 **T. Milenković**, V. Memišević, A.K. Ganesan, and N. Pržulj, “Systems-level cancer gene identification from protein interaction network topology applied to melanogenesis-related functional genomics data”, *Journal of the Royal Society Interface*, doi: 10.1098/rsif.2009.0192, 2009.
- J-4 **T. Milenković**[†], I. Filippis[†], M. Lappe, and N. Pržulj, “Optimized Null Model of Protein Structure Networks,” *PLoS ONE*, 4(6): e5967, 2009.
[†]These authors contributed equally to this work.
- J-3 C. Guerrero, **T. Milenković**, N. Pržulj, P. Kaiser, L. Huang, “Characterization of the proteasome interaction network using a QTAX-based tag-team strategy and protein interaction network analysis,” *PNAS*, 105(36), 13333-13338, 2008.
- J-2 **T. Milenković** and N. Pržulj, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *Cancer Informatics*, 2008:6 257-273, 2008.
- J-1 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” *BMC Bioinformatics*, 9:70, January 30, 2008.¹

¹J-1 is reported as “Highly Accessed” by the BMC Bioinformatics website.

REFEREED BOOK CHAPTERS:

- B-1 N. Pržulj and **T. Milenković**, “Computational Methods for Analyzing and Modeling Biological Networks,” a chapter in *Biological Data Mining*, edited by Jake Chen and Stefano Lonardi, Chapman & Hall/CRC; 1 edition, September 1, 2009.

TUTORIALS:

- T-1 N. Pržulj and **T. Milenković**, *Biological Networks: Analyses, Models, Functions, and Disease*, 9th International Conference on Systems Biology (ICSB’08), Gothenburg, Sweden, August 22-28, 2008.

REFEREED POSTERS:

- P-21 V. Memišević, **T. Milenković**, and N. Pržulj, “An integrative approach to modelling biological networks,” *ICSB’09*, Stanford, California, 2009.
- P-20 O. Kuchaiev, **T. Milenković**, V. Memišević, W. Hayes, and N. Pržulj, “Topological network alignment uncovers biological function and phylogeny,” *ICSB’09*, Stanford, California, 2009.
- P-19 **T. Milenković**, V. Memišević, A.K. Ganesan, and N. Pržulj, “Systems-level Cancer Gene Identification from Protein Interaction Network Topology Applied to Melanogenesis-related Interaction Networks,” *ICSB’09*, Stanford, California, 2009.
- P-18 O. Kuchaiev, **T. Milenković**, V. Memišević, W. Hayes, and N. Pržulj, “Topological network alignment uncovers biological function and phylogeny,” *ISMB/ECCB’09*, Stockholm, Sweden, 2009.
- P-17 **T. Milenković**, V. Memišević, A.K. Ganesan, and N. Pržulj, “Systems-level Cancer Gene Identification from Protein Interaction Network Topology Applied to Melanogenesis-related Interaction Networks,” *ISMB/ECCB’09*, Stockholm, Sweden, 2009.
- P-16 R. Kaake, **T. Milenković**, C.M. Guerrero, N. Pržulj, P. Kaiser, and L. Huang, “Quantifying Cell Cycle-Dependent Changes in Protein Interacting Network of the Yeast 26S Proteasome,” *57th ASMS Conference on Mass Spectrometry*, 2009.
- P-15 **T. Milenković** and N. Pržulj, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *European Conference on Computational Biology (ECCB) 2008*, Cagliari, Italy, September 22-26, 2008.
- P-14 **T. Milenković**, I. Filippis, M. Lappe, and N. Pržulj, “Optimized Null Model for Protein Structure Networks,” *European Conference on Computational Biology (ECCB) 2008*, Cagliari, Italy, September 22-26, 2008.
- P-13 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” *European Conference on Computational Biology (ECCB) 2008*, Cagliari, Italy, September 22-26, 2008.
- P-12 **T. Milenković** and N. Pržulj, “Uncovering disease genes and function via graphlet degree signatures,” *International Conference on Systems Biology (ICSB) 2008*, Gothenburg, Sweden, August 22-28, 2008.
- P-11 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” *International Conference on Systems Biology (ICSB) 2008*, Gothenburg, Sweden, August 22-28, 2008.
- P-10 **T. Milenković**, I. Filippis, M. Lappe, and N. Pržulj, “Optimized Null Model for Protein Structure Networks,” *International Conference on Systems Biology (ICSB) 2008*, Gothenburg, Sweden, August 22-28, 2008.

- P-9 **T. Milenković** and N. Pržulj, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *Intelligent Systems for Molecular Biology (ISMB) 2008*, Toronto, Canada, July 19-23, 2008.
- P-8 **T. Milenković**, I. Filippis, M. Lappe, and N. Pržulj, “Optimized Null Model for Protein Structure Networks,” *Intelligent Systems for Molecular Biology (ISMB) 2008*, Toronto, Canada, July 19-23, 2008.
- P-7 C. Guerrero, **T. Milenković**, J. J. Jones, N. Pržulj, P. Kaiser, and L. Huang, “Characterizing the 26S Proteasome Network in Yeast using a Quantitative In-Vivo Crosslinking Strategy and PPI Network Analysis,” *56th ASMS Conference on Mass Spectrometry*, Denver, Colorado, June 1 - 5, 2008.
- P-6 **T. Milenković** and N. Pržulj, “Protein Signatures: Interplay of Topology and Biology,” a poster at the *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-5 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” a poster at the *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-4 **T. Milenković**, I. Filippis, M. Lappe, and N. Pržulj, “Optimized Null Model of Residue Interaction Graphs,” a poster at the *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-3 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” a poster at the *International Conference on Systems Biology (ICSB) 2007*, Long Beach, California, October 1-6, 2007.
- P-2 **T. Milenković**, I. Filippis, M. Lappe, and N. Pržulj, “Optimized Null Model of Residue Interaction Graphs,” a poster at the *International Conference on Systems Biology (ICSB) 2007*, Long Beach, California, October 1-6, 2007.
- P-1 **T. Milenković**, J. Lai, and N. Pržulj, “GraphCrunch: A Tool for Large Network Analyses,” a poster at the *Intelligent Systems for Molecular Biology/European Conference on Computational Biology (ISMB/ECCB) 2007*, Vienna, Austria, July 21-25, 2007.

CONTRIBUTED TALKS:

- CT-4 O. Kuchaiev[†], **T. Milenković**[†], V. Memišević, W. Hayes, N. Pržulj, “Topological network alignment uncovers biological function and phylogeny”, *BioPathways* meeting at *ISMB/ECCB’09*, Stockholm, Sweden, June 2009.

[†]These authors contributed equally to this work.

- CT-3 **T. Milenković** and N. Pržulj, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *12th Serbian Mathematical Congress*, Novi Sad, Serbia, August 28 - September 2, 2008.
- CT-2 **T. Milenković** and N. Pržulj, “From network structure to biological function in protein-protein interaction networks,” *BioPathways*, a Satellite Conference of *Intelligent Systems for Molecular Biology (ISMB’08)*, Toronto, Canada, July 18-19, 2008.
- CT-1 **T. Milenković** and N. Pržulj, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *BioPathways*, a Satellite Conference of *Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB’07)*, Vienna, Austria, July 19-20, 2007.

EXPERIENCE DETAILS

Research Assistant and Graduate Student Researcher, University of California, Irvine. July 2007–December 2007, July 2008–September 2008, January 2009–present.

ADVISOR: Prof. Nataša Pržulj.

- I have been analyzing and modeling biological networks, with particular focus on protein-protein interaction and protein structure networks. I have proposed an optimal null model for these networks using both graph-theoretical and probabilistic methods. I have participated in developing an open-source research software for large networks analyses. Additionally, I have devised a new computational method that describes the close relationship between the topology of biological networks and their function. I have used this method to predict function of yet unannotated proteins, as well as to imply involvement of genes in cancer, validating our predictions both biologically and through the literature search. I plan to improve the method to get more insights into pharmacology as well. I have also been working on developing new algorithms for large network comparisons and alignments, which could explain conservation of biological function across species and evolution in general.

Substitute Instructor, Teaching Assistant, and Reader, University of California, Irvine.

January 2007–January 2009.

- I gave lectures, tutorials, and office hours, created, solved, and marked assignments and exams, and supervised exams for the following courses:

Graduate courses:

Substitute Instructor: CS 288A Biological Networks, Winter 2009.

Undergraduate courses:

Teaching Assistant: CS 132 Computer Networks, Fall 2008.

Reader: CS 146 Programming in Multitasking Operating Systems, Spring 2008.

Reader: CS 115 Computer Simulation, Spring 2008.

Reader: CS 171 Introduction to Artificial Intelligence, Winter 2008.

Teaching Assistant: CS 133 Advanced Computer Networks, Spring 2007.

Reader: CS 122A Introduction to Data Management, Winter 2007.

Expert System Developer, JP Elektroprivreda, Sarajevo, Bosnia and Herzegovina.

April 2006–August 2006.

- I worked full-time as an expert system developer in the Information Technologies department at JP Elektroprivreda, Sarajevo, Bosnia and Herzegovina. I was part of the team responsible for designing and implementing the information system and applications for monitoring the production, distribution, and trade of electrical energy.

Conference Assistant, United Nations Development Programme (UNDP), Sarajevo, Bosnia and Herzegovina.

February 2005.

- I was responsible for preparing the conference material, welcoming conference attendees, distributing the conference material to them, and providing technical support during presentations.

ADDITIONAL QUALIFICATIONS

4 semesters at Cisco Networking Academy, Sarajevo, Bosnia and Herzegovina, 2004–2006.

CERTIFICATES: CCNA1, CCNA2, CCNA3, and CCNA4.

Crossroad Workshop: Program for Establishing Companies, Bosnia and Herzegovina, 2005.

CERTIFICATES: project management, business communication, teamwork, leadership and conflict management, marketing and promotion, finances and accounting.

AFFILIATIONS

International Society for Computational Biology (ISCB),
Institute of Electrical and Electronics Engineers (IEEE).

REFERENCES

Prof. Nataša Pržulj
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LONDON, SW7 2AZ, UK
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Other references are available upon request.