

NATAŠA PRŽULJ: CURRICULUM VITÆ

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RESEARCH INTERESTS

Systems biology: modeling and algorithms for molecular and cellular networks.

Proteomics: structure and function of proteins and protein-protein interaction networks.

Graph theory: computational graph theory and algorithms; structured families of graphs.

EDUCATION

Ph.D. Computer Science, University of Toronto, April 2005.

TITLE: *Analyzing Large Biological Networks: Protein-Protein Interactions Example.*

ADVISORY COMMITTEE: Derek G. Corneil (CS, co-supervisor), Igor Jurisica (CS, co-supervisor), Rudi Mathon (CS), Gil Prive (Medical Biophysics).

M.Sc. Computer Science, University of Toronto, January 2000.

TITLE: *Minimal Hereditary Dominating Pair Graphs.*

SUPERVISOR: Derek G. Corneil (CS).

B.Sc. Computer Science, Simon Fraser University, April 1997.

FIRST CLASS HONORS.

CGPA 3.85 out of 4.

Department of Mathematics, University of Belgrade, September 1991-93.

Completed 2 out of 4 years in Computer Science and Mathematics Program.

CGPA 9 out of 10.

AWARDS AND DISTINCTIONS

NSF CAREER Award (PI), \$569,905, UC Irvine, 2007-2011.

Council on Research, Computing and Library Resources (co-PI), \$11,803, UCI, 2008-09.

Center for Complex Biological Systems Annual Retreat Prizes (PI), \$20,000, UCI, 2008.

Nominated for 2008 **SIAM Dénes König Prize** (SIAG/Discrete Math) for paper J-9 below.

Council on Research, Computing and Library Resources (CORCLR), \$5,400, UCI, 2006-2007.

U of T Arts and Sciences Fellowship, University of Toronto, Winter 2004.

OGS (Ontario Graduate Scholarship), University of Toronto, Jan - Dec 2004.

IBM CAS (Center for Advanced Studies) Ph.D. Fellowship, U of Toronto, Jan - Dec 2003.

NSERC Postgraduate Scholarship A, University of Toronto, 1999-2001.

OGS (Ontario Graduate Scholarship), University of Toronto, 1998-1999.

Computer Science Graduate Entrance Award, University of Toronto, 1998-1999.

SFU Undergraduate Open Scholarship, Simon Fraser University, Fall 1995 – Spring 1997.

SFU Alumni Scholarship, Simon Fraser University, Spring 1997.

India Club Scholarship, Simon Fraser University, Spring 1997.

SFU Alumni Scholarship, Simon Fraser University, Spring 1996.

Motorola Wireless Data Group Scholarship, Simon Fraser University, Fall 1995.

NSERC Industrial Undergraduate Student Research Award, Hughes Aircraft, Summer 1995.

SFU Alumni Scholarship, Simon Fraser University, Spring 1995.

Hughes Aircraft of Canada Scholarship, Simon Fraser University, Fall 1994.

Ministry of Education Scholarship, University of Belgrade, Yugoslavia, 1992-1993.

PROFESSIONAL POSITIONS

2005–present: Assistant Professor, Computer Sci. Dept., University of California, Irvine.
2008–present: Member of the University of California Irvine (UCI) Cancer Center.
2006–present: Member of the UCI Center for Complex Biological Systems (CCBS).
2005–present: Member of the UCI Institute for Genomics and Bioinformatics (IGB).
2005: Post-doctoral Fellow, Samuel Lunenfeld Research Institute, U of Toronto, Canada.
2002–2003: Research Assistant, Banting and Best Institute, University of Toronto.
1999–2002: Substitute Instructor and Teaching Assistant, University of Toronto.
2000: Visiting PhD Student, The Fields Institute for Research in Math. Sciences, Toronto.
1997–1998: Programming Consultant, Westech Information Systems, Vancouver, Canada.
1996–1997: Research Assistant, Simon Fraser University, Canada.
1996: Teaching Assistant, Simon Fraser University, Canada.
1995: Quality Assurance Engineer, Hughes Aircraft of Canada Ltd., Richmond, BC, Canada.

CONTRIBUTIONS TO RESEARCH AND DEVELOPMENT

REFEREED JOURNAL PAPERS:

- J-20 O. Kuchaiev, T. Milenkovic, V. Memisevic, W. Hayes, and **N. Pržulj**, “Topological network alignment uncovers biological function and phylogeny,” submitted, arXiv:0810.3280.
- J-19 V. Memisevic, T. Milenkovic, and **N. Pržulj**, “An integrative approach to modelling biological networks,” submitted, arXiv:0906.0125v1.
- J-18 O. Kuchaiev, M. Rasajski, D. J. Higham, and **N. Pržulj**, “Geometric de-noising of protein-protein interaction networks,” *PLoS Computational Biology*, to appear.
- J-17 T. Milenkovic, V. Memisevic, 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*, to appear.
- J-16 T. Milenkovic, I. Filippis, M. Lappe, and **N. Pržulj**, “Optimized Null Model of Protein Structure Networks,” *PLoS ONE*, 4 (6), e5967, June 2009.
- J-15 C. Guerrero, T. Milenkovic, **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-14 T. Milenkovic and **N. Pržulj**, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *Cancer Informatics*, 2008:6 257-273, 2008.
- J-13 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Fitting a Geometric Graph to a Protein-Protein Interaction Network,” *Bioinformatics*, 24 (8):1093-1099, 2008.
- J-12 T. Milenkovic, J. Lai, and **N. Pržulj**, “GraphCrunch: A Tool for Large Network Analyses,” *BMC Bioinformatics*, 9:70, January 30, 2008.¹
- J-11 F. Hormozdiari, P. Berenbrink, **N. Pržulj**, and C. Sahinalp, “Not All Scale Free Networks are Born Equal: the Role of the Seed Graph in PPI Network Emulation,” *PLoS Computational Biology*, 3(7):e118, doi:10.1371/journal.pcbi.0030118, July 2007.
- J-10 **N. Pržulj** and D. J. Higham, “Modelling Protein-Protein Interaction Networks via a Stickiness Index,” *Journal of the Royal Society Interface*, volume 3, number 10, pages 711 - 716, 2006.

¹J-12 is reported as “Highly Accessed” by the BMC Bioinformatics website.

- J-9 **N. Pržulj**, “Biological Network Comparison Using Graphlet Degree Distribution,” Proceedings of the 2006 European Conference on Computational Biology (ECCB 2006), Eilat, Israel, January 21-24, 2007, acceptance rate 18%. *Bioinformatics*, volume 23, pages e177-e183, 2007.
- J-8 **N. Pržulj**, D. G. Corneil, and I. Jurisica, “Efficient estimation of graphlet frequency distributions in protein-protein interaction networks,” *Bioinformatics*, volume 22, number 8, pages 974-980, 2006.
- J-7 M. Barrios-Rodiles, K. R. Brown, B. Ozdamar, Z. Liu, R. S. Donovan, F. Shinjo, Y. Liu, R. Bose, J. Dembowy, I. W. Taylor, V. Luga, **N. Pržulj**, M. Robinson, H. Suzuki, Y. Hayashizaki, I. Jurisica, and J. L. Wrana, “High-Throughput Mapping of a Dynamic Signaling Network in Mammalian Cells,” *Science*, volume 307, number 5715, pages 1621-1625, 2005.
- J-6 **N. Pržulj** and D. G. Corneil, “2-tree Probe Interval Graphs Have a Large Obstruction Set,” *Discrete Applied Mathematics*, volume 150, number 1-3, pages 216-231, 2005.
- J-5 **N. Pržulj**, D. G. Corneil, and I. Jurisica, “Modeling Interactome: Scale-Free or Geometric?,” *Bioinformatics*, volume 20, number 18, pages 3508-3515, 2004.
- J-4 A. D. King, **N. Pržulj**, and I. Jurisica, “Protein complex prediction via cost-based clustering,” *Bioinformatics*, volume 20, number 17, pages 3013 - 3020, 2004.
- J-3 **N. Pržulj**, D. Wigle, and I. Jurisica, “Functional Topology in a Network of Protein Interactions,” *Bioinformatics*, volume 20, number 3, pages 340-348, 2004.
- J-2 **N. Pržulj**, D. G. Corneil, and E. Koehler, “Hereditary Dominating Pair Graphs,” *Discrete Applied Mathematics*, volume 134, pages 239-261, 2004.
- J-1 A. L. Liestman and **N. Pržulj**, “Minimum Average Time Broadcast Graphs,” *Par. Proc. Lett.*, volume 8, pages 139-147, 1998.

REFEREED CONFERENCE PAPERS:

- C-5 O. Kuchaiev, P. T. Wang, Z. Nenadic, and **N. Pržulj**, “Structure of Brain Functional Networks,” 31st Annual International Conference of the *IEEE Engineering in Medicine and Biology Society (EMBC'09)*, Minneapolis, Minnesota, USA, September 2-6, 2009.
- C-4 O. Kuchaiev and **N. Pržulj**, “Learning the structure of protein-protein interaction networks,” Proceedings of the 2009 *Pacific Symposium on Biocomputing (PSB 2009)*, Big Island, Hawaii, January 5-9, 2009.
- C-3 **N. Pržulj**, “Geometric local structure in biological networks,” IEEE Xplore digital library, **Invited Paper**, Proceedings of the 2007 *IEEE Information Theory Workshop (ITW 2007)*, Lake Tahoe, California, September 2-6, 2007.
- C-2 F. Hormozdiari, P. Berenbrink, **N. Pržulj**, and C. Sahinalp, “Not All Scale Free Networks are Born Equal: the Role of the Seed Graph in PPI Network Emulation,” in Proceedings of *RECOMB Satellite Conferences on Systems Biology and Computational Proteomics*, UC San Diego, December 1-3, 2006, acceptance rate 26%; *Lecture Notes in Computer Science*, volume 4532/2007, pages 1-13, September 19, 2007. (Journal version is J-11 above.)
- C-1 **N. Pržulj**, “Biological Network Comparison Using Graphlet Degree Distribution,” Proceedings of the 2006 European Conference on Computational Biology (ECCB 2006), Eilat, Israel, January 21-24, 2007, acceptance rate 18%. (Journal version is J-9 above.)

REFEREED BOOK CHAPTERS:

- B-2 **N. Pržulj** and T. Milenkovic, “Computational Methods for Analyzing and Modeling Biological Networks,” a chapter in *Biological Data Mining*, edited by Jake Chen and Stefano Lonardi, CRC Press, to appear.

B-1 **N. Pržulj**, “Graph Theory Analysis of Protein-Protein Interactions,” a chapter in *Knowledge Discovery in Proteomics*, edited by Igor Jurisica and Dennis Wigle, CRC Press, 2006.

NON-REFEREED BOOK CHAPTERS:

B-1 **N. Pržulj**, “From Topology to Alignment, Function and Disease in Protein-Protein Interaction Networks,” a chapter in *Complex Networks across the Natural and Technological Sciences*, edited by Des Higham, Ernesto Estrada, Maria Fox, and Gian-Luca Oppo, Springer, to appear.

REFEREED POSTERS:

P-28 T. Milenkovic, V. Memisevic, A. K. Ganesan, and **N. Pržulj**, “Systems-level cancer gene identification from protein interaction network topology applied to melanogenesis-related functional genomics data,” *Intelligent Systems for Molecular Biology/European Conference on Computational Biology (ISMB/ECCB) 2009*, Stockholm, Sweden, June 27 - July 2, 2009.

P-27 R. Kaake, T. Milenkovic, **N. Pržulj**, P. Kaiser, L. Huang, “Quantifying Cell Cycle-dependent Changes in Posttranslational Modifications and Interacting Network of the Yeast 26S Proteasome,” *57th ASMS Conference on Mass Spectrometry*, Philadelphia, Pennsylvania, USA, May 31 - June 4, 2009.

P-26 T. Milenkovic 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-25 T. Milenkovic, 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-24 T. Milenkovic, 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-23 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Discovering Geometric Structure in Protein-Protein Interaction Networks: The Embedding Algorithm,” *European Conference on Computational Biology (ECCB) 2008*, Cagliari, Italy, September 22-26, 2008.

P-22 T. Milenkovic 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-21 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Discovering Geometric Structure in Protein-Protein Interaction Networks: The Embedding Algorithm,” *International Conference on Systems Biology (ICSB) 2008*, Gothenburg, Sweden, August 22-28, 2008.

P-20 T. Milenkovic, 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-19 T. Milenkovic, 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-18 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Discovering Geometric Structure in Protein-Protein Interaction Networks,” *Intelligent Systems for Molecular Biology (ISMB) 2008*, Toronto, Canada, July 19-23, 2008.

- P-17 T. Milenkovic 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-16 T. Milenkovic, 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-15 C. Guerrero, T. Milenkovic, 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-14 T. Milenkovic and **N. Pržulj**, “Protein Signatures: Interplay of Topology and Biology,” *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-13 T. Milenkovic, J. Lai, and **N. Pržulj**, “GraphCrunch: A Tool for Large Network Analyses,” *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-12 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Networks as Geometric Random Graphs: A Direct Approach,” *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-11 T. Milenkovic, I. Filippis, M. Lappe, and **N. Pržulj**, “Optimized Null Model of Residue Interaction Graphs,” *RECOMB Satellite Conference on Systems Biology 2007*, San Diego, California, November 30 - December 1, 2007.
- P-10 T. Milenkovic, J. Lai, and **N. Pržulj**, “GraphCrunch: A Tool for Large Network Analyses,” *International Conference on Systems Biology (ICSB) 2007*, Long Beach, California, October 1-6, 2007.
- P-9 D. J. Higham, M. Rasajski, and **N. Pržulj**, “Fitting a Geometric Graph to a Protein-Protein Interaction Network,” *International Conference on Systems Biology (ICSB) 2007*, Long Beach, California, October 1-6, 2007.
- P-8 T. Milenkovic, I. Filippis, M. Lappe, and **N. Pržulj**, “Optimized Null Model of Residue Interaction Graphs,” *International Conference on Systems Biology (ICSB) 2007*, Long Beach, California, October 1-6, 2007.
- P-7 T. Milenkovic, J. Lai, and **N. Pržulj**, “GraphCrunch: A Tool for Large Network Analyses,” *Intelligent Systems for Molecular Biology/European Conference on Computational Biology (ISMB/ECCB) 2007*, Vienna, Austria, July 21-25, 2007.
- P-6 Y. Wang and **N. Pržulj**, “Biological implications of anti-motifs in transcriptional regulation networks” *European Conference on Computational Biology (ECCB)*, Eilat, Israel, January 21-24, 2007.
- P-5 **N. Pržulj**, “Biological Network Comparison Using Graphlet Degree Distributions,” *Intelligent Systems for Molecular Biology (ISMB) 2006*, Fortaleza, Brazil, August 6-10, 2006.
- P-4 S. Zhou and **N. Pržulj**, “Do Protein-Protein Interaction Networks Look Like a Jelly-Fish?” *Intelligent Systems for Molecular Biology (ISMB) 2006*, Fortaleza, Brazil, August 6-10 2006.
- P-3 **N. Pržulj**, D. G. Corneil, and I. Jurisica, “Geometric Properties of Protein-Protein Interaction Networks,” *Intelligent Systems for Molecular Biology/European Conference on Computational Biology (ISMB/ECCB) 2004*, Glasgow, UK, July 31 - August 4, 2004.
- P-2 **N. Pržulj** and I. Jurisica, “A Call Graph Analysis,” *CASCON 2003*, Toronto, Ontario, Canada, October 6-9, 2003.

P-1 **N. Pržulj**, D. Wigle, and I. Jurisica, “Functional Topology in a Network of Protein Interactions,” *Intelligent Systems for Molecular Biology (ISMB)* 2003, Brisbane, Australia, June 29 - July 3, 2003.

PRESS COVERAGE:

PC-2 A TV (television) interview about my scientific work was shown on *Enter TV*, Belgrade, Serbia, on September 28, 2007.

PC-1 An interview about my scientific work was published in the daily newspaper *Borba*, Belgrade, Serbia, on September 24, 2007.

TUTORIAL:

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

INVITED TALKS:

IT-45 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM) 2009, Minisymposium on Complex Real-World Networks, Montreal, Quebec, May 25-28, 2009.

IT-44 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” Center for Cancer Systems Biology (CCSB) Seminar Series, Department of Cancer Biology, Dana-Farber Cancer Institute, Harvard Medical School, Boston, MA, May 21, 2009.

IT-43 **N. Pržulj**, “What can we learn from protein-protein interaction networks?” Barbados Workshop on biological and computational analysis of protein-protein interaction networks, McGill University Center for Bioinformatics, Holetown, Barbados, April 19th - 25th, 2009.

IT-42 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” RECOMB Satellite Conference on Bioinformatics Education, UC San Diego, La Jolla, California, March 14-15, 2009.

IT-41 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” Interdisciplinary Workshop on Complex Networks across the Natural and Technological Sciences, The Institute for Advanced Studies, Glasgow, UK, January 27-30, 2009.

IT-40 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” Department of Computing, Imperial College London, UK, January 26, 2009.

IT-39 **N. Pržulj**, “Protein-protein Interaction Networks,” Workshop on Complex Networks across the Natural and Technological Sciences, The Institute for Advanced Studies, UK, January 19-23, 2009.

IT-38 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” Computer Science Department, McGill University, Canada, January 15, 2009.

IT-37 **N. Pržulj**, “From Network Topology to Biological Function and Disease,” University of Edinburgh, UK, December 15, 2008.

IT-36 **N. Pržulj**, “Towards a Theory of Biological Networks,” Structural and Computational Biology Programme Seminar, Institute for Research in Biomedicine (IRB) Barcelona, Spain, October 29, 2008.

IT-35 **N. Pržulj**, “Towards a Theory of Biological Networks,” Spanish National Cancer Research Center (CNIO), Madrid, Spain, October 27, 2008.

- IT-34 **N. Pržulj**, “Towards a Theory of Biological Networks,” School of Computing, Union University, Belgrade, Serbia, October 20, 2008.
- IT-33 **N. Pržulj**, “Towards a Theory of Biological Networks,” Petnica Research Station, Valjevo, Serbia, October 19, 2008.
- IT-32 **N. Pržulj**, “Towards a Theory of Biological Networks,” Centre National de la Recherche Scientifique (CNRS), Laboratoire d’Informatique de Nantes-Atlantique (LINA), University of Nantes, France, July 16, 2008.
- IT-31 **N. Pržulj**, “Examining Biological Networks via Graphlet Degree Signatures,” a minisymposium on “Networks: Biological, Social and Internet” at the SIAM Annual Meeting, San Diego, California, July 7-11, 2008.
- IT-30 **N. Pržulj**, “Towards a Theory of Biological Networks,” Imperial College London, June 30, 2008.
- IT-29 **N. Pržulj**, “Towards a Theory of Biological Networks,” University of Southampton, UK, June 27, 2008.
- IT-28 **N. Pržulj**, “Towards a Theory of Biological Networks,” University of Helsinki, Finland, June 24, 2008.
- IT-27 **N. Pržulj**, “From Structure to Function in Biological Networks,” 2008 UCI Center for Complex Biological Systems Retreat, Pasadena, California, March 28-30, 2008.
- IT-26 **N. Pržulj**, “From Structure to Function in Biological Networks,” 2007 UCI Cancer Center Conference, Rancho Mirage, California, November 9-11, 2007.
- IT-25 **N. Pržulj**, “Protein-Protein Interaction and Other Biological Networks,” Dept. of Biological Chemistry, UC Irvine, September 21, 2007.
- IT-24 **N. Pržulj**, “Geometric Local Structure in Biological Networks,” 2007 IEEE Information Theory Workshop (ITW 2007), Lake Tahoe, California, September 2-6, 2007.
- IT-23 **N. Pržulj**, “Graphs, Proteins, and Simulations,” Petnica Research Station, Valjevo, Serbia, August 11, 2007.
- IT-22 **N. Pržulj**, “Geometric Local Structure in Biological Networks,” 39th Symposium on the Interface: Computing Science and Statistics (Theme: Systems Biology), Philadelphia, Pennsylvania, May 23-26, 2007.
- IT-21 **N. Pržulj**, “Geometric Local Structure in Biological Networks,” Department of Defense Biotechnology HPC Software Applications Institute, Fort Detrick, Frederick, MD, May, 23, 2007.
- IT-20 **N. Pržulj**, “Modeling Large Biological Networks,” Center for Complex Biological Systems at UC Irvine, CCBS/MCB/MCSB Retreat, Redondo Beach, March 23-25, 2007.
- IT-19 **N. Pržulj**, “Protein-Protein Interaction Networks: Issues, Models, and Comparisons,” Institute for Mathematical Behavioral Sciences, UC Irvine, Human Complex Systems Conference, December 8, 2006.
- IT-18 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” University of Glasgow, Computing Science Seminar, Glasgow, UK, October 20, 2006.
- IT-17 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” University of Strathclyde, Mathematics Colloquium, Glasgow, UK, October 18, 2006.
- IT-16 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” Max Planck Institute for Molecular Genetics, Berlin, Germany, September 28, 2006.
- IT-15 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” University of Bremen, Germany, September 26, 2006.
- IT-14 **N. Pržulj**, “Protein-Protein Interaction Networks: Issues, Models, and Comparisons,” The Foundation for Research and Technology – Hellas (FORTH) Research Center, Heraklion, Greece, September 14, 2006.

- IT-13 **N. Pržulj**, “Protein-Protein Interaction Networks: Issues, Models, and Comparisons,” International mathematical conference: *Topics in Mathematical Analysis and Graph Theory (MAGT’06)*, Belgrade, Serbia, September 1-4, 2006.
- IT-12 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” The Institute of Physics, University of Belgrade, Belgrade, Serbia, August 29, 2006.
- IT-11 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” Petnica Research Station, Valjevo, Serbia, August 26, 2006.
- IT-10 **N. Pržulj**, “Comparing and Modeling Protein-Protein Interaction Networks,” Workshop on *Algorithms in Bioinformatics (AlBio’06)*, Moscow, Russia, July 11-13, 2006.
- IT-9 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example,” *Simon Fraser University*, Vancouver, Canada, December 14, 2005.
- IT-8 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example,” *University of Victoria*, Victoria, Canada, December 13, 2005.
- IT-7 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example,” *University of British Columbia*, Vancouver, Canada, December 12, 2005.
- IT-6 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example,” *Institute of Physics, University of Belgrade*, Zemun, Serbia and Montenegro, September 14, 2005.
- IT-5 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example,” *BMC Research Center, RIKEN*, Nagoya, Japan, May 24, 2005.
- IT-4 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example”, *Computer Science Department, UC Riverside*, Riverside, CA, April 25, 2005.
- IT-3 **N. Pržulj**, “Analyzing Large Biological Networks: Protein-Protein Interaction Example”, *Computer Science Department, UC Irvine*, Irvine, CA, March 17, 2005.
- IT-2 **N. Pržulj**, “Analyzing Software Call Graphs,” *Microsoft Research, Redmond, WA*, August 22, 2003.
- IT-1 **N. Pržulj**, D. Wigle, and I. Jurisica, “Functional Topology in a Network of Protein Interactions,” *BioPathways, ISMB’03*, Brisbane, Australia, June 27 - 28, 2003.

CONTRIBUTED TALKS:

- CT-16 O. Kuchaiev, T. Milenkovic, V. Memisevic, W. Hayes, and **N. Pržulj**, “Topological network alignment uncovers biological function and phylogeny,” *BioPathways, a Satellite Conference of Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB’09)*, Stockholm, Sweden, June 27 - July 2, 2009.
- CT-15 O. Kuchaiev and **N. Pržulj**, “Learning the structure of protein-protein interaction networks,” *Pacific Symposium on Biocomputing (PSB 2009)*, Big Island, Hawaii, January 5-9, 2009.
- CT-14 **N. Pržulj**, “Biological Network Comparison Using Graphlet Degree Distribution,” *12th Serbian Mathematical Congress*, Novi Sad, Serbia, August 28 - September 2, 2008.
- CT-13 T. Milenkovic and **N. Pržulj**, “Uncovering Biological Network Function via Graphlet Degree Signatures,” *12th Serbian Mathematical Congress*, Novi Sad, Serbia, August 28 - September 2, 2008.
- CT-12 T. Milenkovic 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-11 T. Milenkovic 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.
- CT-10 **N. Pržulj**, “Biological Network Comparison Using Graphlet Degree Distributions”, *European Conference on Computational Biology (ECCB’06)*, acceptance rate 18%, Eilat, Israel, January 21-24, 2007.
- CT-9 Fereydoun Hormozdiari, Petra Berenbrink, **N. Pržulj**, and Cenk Sahinalp, “Not All Scale Free Networks are Born Equal: the Role of the Seed Graph in PPI Network Emulation”, *Research in Computational Molecular Biology (RECOMB’06) Satellite Conferences on Systems Biology and Computational Proteomics*, UC San Diego, December 1-3, 2006.
- CT-8 **N. Pržulj** and Wayne Hayes, “Biological network comparison using graphlet degree distributions,” *3rd International Symposium on Networks in Bioinformatics (ISNB’06)*, acceptance rate 20%, Amsterdam, the Netherlands, May 29-31, 2006.
- CT-7 **N. Pržulj**, “Uncovering Structure in Protein-Protein Interaction Networks,” *BioPathways*, a Satellite Conference of *Intelligent Systems for Molecular Biology (ISMB’05)*, Detroit, Michigan, June 23 - 24, 2005.
- CT-6 **N. Pržulj**, D. G. Corneil, and I. Jurisica, “Geometric Model of Protein Interaction Networks,” *CNET 2004*, University of Aveiro, Portugal, August 29 - September 2, 2004.
- CT-5 **N. Pržulj** and D. G. Corneil, “2-tree probe interval graphs have a large obstruction set,” *12th Ontario Combinatorics Workshop*, University of Ottawa, May 1-2, 2003.
- CT-4 **N. Pržulj**, G. Lee, and I. Jurisica, “Functional Analysis of Large Software Networks,” *IBM Academy: Proactive Problem Prediction, Avoidance and Diagnosis*, IBM T.J. Watson Research Center, Yorktown, NY, April 28-29, 2003.
- CT-3 **N. Pržulj**, “Minimal Hereditary Dominating Pair Graphs,” *Workshop on Structured Families of Graphs*, The Fields Institute, May 8-13, 2000.
- CT-2 **N. Pržulj**, “Minimal Hereditary Dominating Pair Graphs,” *Special Year on Graph Theory and Combinatorial Optimization Program Seminar Series*, The Fields Institute, March 22, 2000.
- CT-1 A. L. Liestman and **N. Pržulj**, “Minimum Average Time Broadcast Graphs,” *27th SE International Conference on Combinatorics, Graph Theory, and Computing*, Boca Raton, Florida, March, 1997.

ACADEMIC SERVICE

EDITORIAL REVIEW BOARD MEMBER:

1. International Journal of Knowledge Discovery in Bioinformatics (IJKDB).

GOVERNMENT GRANT PROPOSAL REVIEWING:

7. Reviewed proposals for the Medical Research Council (MRC), UK, 2009.
6. Reviewed proposals for the Israel Science Foundation (ISF), Israel, 2009.
5. A panelist for the Academy of Finland Research Council for Natural Sciences and Engineering, Helsinki, Finland, 2008.
4. Reviewed proposals for the Biotechnology and Biological Sciences Research Council (BBSRC), UK, 2007.

3. Reviewed proposals for the US NSF (National Science Foundation) DMS Applied Mathematics Program, 2007.
2. US NSF (National Science Foundation) panelist at a Panel of CISE IIS program, Arlington, VA, USA, 2007.
1. US NSF (National Science Foundation) panelist at a Panel of CISE SEII program, Arlington, VA, USA, 2006.

PROGRAM COMMITTEE MEMBER:

5. Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB) 2009, Stockholm, Sweden, June 27 - July 2, 2009.
4. 16th International Symposium on Graph Drawing, Crete, Greece, September 21-24, 2008.
3. International Workshop on Data Mining in Bioinformatics (BIOKDD '08) at the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD'08), Las Vegas, NV, USA, August 24-27, 2008.
2. International Workshop on Data Mining in Bioinformatics (BIOKDD '07) at the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD'07), San Jose, CA, USA, August 12th, 2007.
1. Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB) 2007, Vienna, Austria, July 21-25, 2007.

TUTORIAL AUTHOR AND PRESENTER:

1. Tutorial on *Biological Networks: Analyses, Models, Functions, and Disease* at the *9th Conference on Systems Biology (ICSB)*, Gothenburg, Sweden, August 22-28, 2008.

SESSION CHAIR:

4. RECOMB Satellite Conference on Bioinformatics Education (RECOMB-BE) 2009, UC San Diego, La Jolla, California, March 14-15, 2009.
3. Invited session, Center for Algorithmic and Systems Biology, CASB-20, UC San Diego, La Jolla, California, March 14-15, 2009.
2. Invited session on *Networks in Society and Technology* at the *Complex Networks Across the Technological and Natural Sciences*, Institute for Advanced Studies, Glasgow, UK, January 27-30, 2009.
1. Invited session on *Biological Networks* at the *39th Symposium on the Interface: Computing Science and Statistics – Systems Biology*, Philadelphia, PA, May 23-26, 2007.

JOURNAL PAPER REVIEWER:

10. *Algorithms for Molecular Biology* (BioMed Central).
9. *Bioinformatics* (Oxford Journals).
8. *BMC Bioinformatics* (BioMed Central).
7. *Cancer Informatics* (Libertas Academica).
6. *Discrete Mathematics* (Elsevier).
5. *Discrete Applied Mathematics* (Elsevier).
4. *Genome Biology* (BioMed Central).
3. *Nature Biotechnology* (Nature Publishing Group).

2. *PLoS Computational Biology* (Public Library of Science).
1. *Proteins: Structure, Function, and Bioinformatics* (Wiley).

CONFERENCE PAPER REVIEWER:

9. Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB) 2009, Stockholm, Sweden, June 27 - July 2, 2009.
8. 2009 American Medical Informatics Association (AMIA) Summit on Translational Bioinformatics (STB 2009), San Francisco, CA, March 15-17, 2009.
7. International Workshop on Data Mining in Bioinformatics (BIOKDD '08) at the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD'08), Las Vegas, NV, USA, August 24-27, 2008.
6. Computational Systems Bioinformatics (CSB '08), Stanford, CA, August 25-29, 2008.
5. Combinatorial Pattern Matching (CPM '08), Pisa, Italy, June 18-20, 2008.
4. International Workshop on Data Mining in Bioinformatics (BIOKDD '07) at the ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (SIGKDD '07), San Jose, CA, USA, August 12, 2007.
3. Intelligent Systems for Molecular Biology and European Conference on Computational Biology (ISMB/ECCB '07), Vienna, Austria, July 21-25, 2007.
2. Pacific Symposium on Biocomputing (PSB '07), Maui, Hawaii, January 3-7, 2007.
1. Intelligent Systems for Molecular Biology (ISMB '06), Fortaleza, Brazil, August 6-10, 2006.

UCI COMMITTEE MEMBER:

3. School of Information and Computer Sciences (ICS) representative to the UC Irvine Senate Assembly, 2008-2009.
2. Graduate Committee, Information and Computer Science (ICS), UCI, 2006–2008;
1. Computing Committee, Information and Computer Science (ICS), UCI, 2005–2006.

SERVICE AS A STUDENT:

4. President: Computer Science Graduate Student Society, U of T, 2000-2002.
3. Executive member: Computer Science Graduate Student Society, U of T, 1998-2004.
2. Graduate Student Representative: Graduate Committee, Department of Computer Science, U of T, 1998-2001.
1. President: International Students' Club, Simon Fraser University, 1995-1996.

TEACHING

TAUGHT GRADUATE COURSES:

8. COMPSCI 265 Graph Algorithms, ICS, UCI, Winter 2009.
 - Enrollment: 12 students.
 - Student Evaluations – Overall Median: 7 (on 0-9 scale); 8 students responded.
7. COMPSCI 288A Biological Networks, ICS, UCI, Winter 2009.
 - Enrollment: 3 students.
 - Student Evaluations – Overall Median: 9 (on 0-9 scale); 2 students responded.

6. ICS 288A Biological Networks, ICS, UCI, Winter 2007.
 - Enrollment: 6 students.
 - Student Evaluations – Overall Median: 9 (on 0-9 scale); 3 students responded.
5. I&C SCI 280 Biological Networks, ICS, UCI, Winter 2006.
 - Enrollment: 7 students.
 - Student Evaluations – Overall Median: 7.71 (on 0-9 scale); 7 students responded.
4. I&C SCI 265 Graph Algorithms, ICS, UCI, Winter 2006.
 - Enrollment: 7 students.
 - Student Evaluations – Overall Median: 6.33 (on 0-9 scale); 3 students responded.
3. ICS 298 Thesis Supervision ICS, UCI, Winter-Spring 2008.
 - Enrollment: 3 students.
2. I&C SCI 299: Individual Study, ICS, UCI, 2006-2009
 - Enrollment: 5 students.
1. I&C SCI 290: Research Project, ICS, UCI, 2006-2009
 - Enrollment: 4 students.

TAUGHT UNDERGRADUATE COURSES:

5. ICS 139W: Critical Writing, ICS, UCI, Winter 2009.
 - Enrollment: 58 students.
 - Student Evaluations – Overall Median: 7 (on 0-9 scale); 19 students responded.
4. CS 163: Graph Algorithms, ICS, UCI, Spring 2008.
 - Enrollment: 49 students.
 - Student Evaluations–Overall Median: 6.65 (on 0-9 scale); 17 students responded.
3. ICS 139W: Technical Writing, ICS, UCI, Winter 2007.
 - Enrollment: 53 students.
 - Student Evaluations–Overall Median: 8.50 (on 0-9 scale); 16 students responded.
2. ICS 139W: Technical Writing, ICS, UCI, Winter 2007.
 - Enrollment: 30 students.
 - Student Evaluations–Overall Median: 7 (on 0-9 scale); 9 students responded.
1. I&C SCI 199: Individual Study, ICS, UCI, Spring and Fall 2006.
 - Enrollment: 2 students.

DEVELOPED A NEW GRADUATE COURSE:

1. I&C SCI 288A Biological Networks, ICS, UCI, first offered in Winter 2007.

STUDENT SUPERVISION

SUPERVISED POST-DOCTORAL FELLOWS:

1. Marija Rasajski, Information and Computer Science (ICS), UCI, May 2007 – May 2008.

SUPERVISED GRADUATE STUDENTS:

6. Tijana Milenkovic, Ph.D. candidate (advanced to candidacy), ICS, UCI, September 2006 – present.

5. Vesna Memisevic, Ph.D. student, ICS, UCI, September 2007 – present.
4. Oleksii Kuchaiev, Ph.D. student, ICS, UCI, September 2007 – present.
3. Aleksandar Stevanovic, Ph.D. student, ICS, UCI, September 2008 – present.
2. Jingjing Li, Ph.D. student, ICS UCI, September–December, 2006.
1. Hania El Ayoubi, defended M.Sc. thesis in 2007. Computer Science, University of Toronto. Co-supervised with Prof. D. G. Corneil, 04/2006–06/2007.

ALUMNI:

2. Tijana Milenkovic, M.Sc., 2008, Computer Science, UC Irvine.
1. Hania El Ayoubi, M.Sc., 2007. Computer Science, University of Toronto. Co-supervised by Prof. D. G. Corneil.

SERVED ON PH.D. COMMITTEES OF:

7. Oleksii Kuchaiev, Ph.D. candidate, Computer Science, UCI. Jne 12, 2009, Ph.D. Candidacy Exam, Ph.D. Advisor.
6. Vesna Memisevic, Ph.D. candidate, Computer Science, UCI. Jne 11, 2009, Ph.D. Candidacy Exam, Ph.D. Advisor.
5. Tijana Milenkovic, Ph.D. candidate, Computer Science, UCI. July 3, 2008, Ph.D. Candidacy Exam, Ph.D. Advisor.
4. Martin Brandon, Ph.D. candidate, Information and Computer Science (ICS), UCI. December 13, 2006, Ph.D. Topic Defense, Committee member.
3. Harindar Keer, Ph.D. candidate, Chemistry, UCI. March 21, 2007, Ph.D. Candidacy Exam, Committee member.
2. Shyam Srinivasan, Ph.D. candidate, Information and Computer Science (ICS), UCI. 2006, Ph.D. Candidacy Exam, Committee member.
1. David Joshua Dibble, Ph.D. candidate, Organic Chemistry, UCI. 2006, Ph.D. Candidacy Exam, Committee member.

UNDERGRADUATE STUDENTS:

3. Naveen Nathan, ICS, UCI, June 2007 – December 2007.
2. David Hubin, ICS, UCI, March 2006 – June 2007. Recipient of a SURP UCI award for Summer 2006 and a UROP UCI award for 2006/07.
1. Jason Lai, ICS, UCI, October 2005 – June 2007.

HIGH-SCHOOL STUDENT:

1. Stefan Covic, May 2006.

RESEARCH SUPPORT

5. NSF CAREER:
 PI: Natasa Przulj
 Funding Organization: National Science Foundation
 Funding period: 2007–2011
 Funds received: \$569,905

4. UCI Set-up:
 PI: Natasa Przulj
 Funding Organization: UC Irvine, School of Information and Computer Sciences
 Funding period: 2005–2011
 Funds received: \$200,000
3. UCI Council on Research, Computing and Library Resources (CORCLR):
 PI: Zoran Nenadic, Biomedical Engineering, UC Irvine
 co-PI: Natasa Przulj, Computer Science, UC Irvine
 Funding Organization: Council on Research, Computing and Library Resources, UCI
 Funding period: 2008–2009
 Funds received: \$11,800
2. UCI Center for Complex Biological Systems (CCBS):
 PI: Natasa Przulj
 co-PI: Zoran Nenadic, Biomed. Engineering, UCI
 Funding Organization: Center for Complex Biological Systems (CCBS), UCI
 Funding period: 2008
 Funds received: \$10,000
1. UCI Center for Complex Biological Systems (CCBS):
 PI: Natasa Przulj
 co-PI: Anand Ganesan, Dermatology, UCI
 Funding Organization: Center for Complex Biological Systems (CCBS), UCI
 Funding period: 2008
 Funds received: \$10,000

EXPERIENCE DETAILS

Assistant Professor, Department of Computer Science, UC Irvine, Irvine, CA, USA.
 July 2005 – present.

Postdoctoral Fellow, Samuel Lunenfeld Research Institute, Toronto, ON, Canada.
 March 2005 – June 2005.
 SUPERVISOR: Jeff Wrana.

- I analyzed and modeled protein-protein interaction networks. My models were used to guide biological experiments for identifying protein-protein interactions.

Research Assistant, Banting and Best Institute, University of Toronto, ON, Canada.
 Sept 2002 - May 2003.

- I analyzed large networks of protein interactions using novel graph-theoretic approaches.

Teaching Assistant and Substitute Instructor, University of Toronto, ON, Canada.
 May 1999 - May 2002

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

First year course:

Teaching Assistant and Substitute Instructor: CSC 199 Beautiful Algorithms, Fall 2001 and Spring 2002.

Second year course:

Teaching Assistant: CSC 238 Discrete Mathematics, Summer 1999 and Summer 2001.

Third year course:

Teaching Assistant: MATC32 Graph Theory and Algorithms, University of Toronto at Scarborough, Fall 2000.

Graduate course:

Teaching Assistant: CSC 2414 Topics in Applied Discrete Mathematics: Analysis of Algorithms, Spring 2002.

Visiting PhD Student, The Fields Institute, Toronto, ON, Canada.
Jan 2000 - Dec 2000.

Programming Consultant, Westech Information Systems, Vancouver, BC, Canada.
May 1997 - Aug 1998.

- I worked full-time as a programming consultant on the GIS Smallworld team, and provided programming services for object oriented AM/FM/GIS systems on the Windows NT platform. I developed Object Oriented GUI GIS utility applications in Smallworld Magik, translated data from GFIS to Smallworld, installed an Oracle Server and made an interface between Oracle and Smallworld applications. I also performed System Administration GIS tasks such as image building and maintenance.

Research Assistant, Simon Fraser University, Burnaby, BC, Canada.
Sept 1996 - Dec 1996 and Sept 1997 - Dec 1997.

- I worked under the supervision of Prof. A. Liestman on network broadcasting problems. Our research resulted in the paper J-1 listed above, and the talk CT-1 listed above.

Teaching Assistant, Simon Fraser University, Burnaby, BC, Canada.
Jan 1996 - Apr 1996.

- MAT 154, 155, 157, 158 Applied Calculus Courses. I held office hours, explained mathematical problems to students, marked homework, supervised and marked exams.

Quality Assurance Engineer, Hughes Aircraft of Canada Ltd., Richmond, BC, Canada.
May 1995 - Aug 1995.

- I reviewed and approved documents of all phases of software development, participated in meetings conducted to approve software development phases, and wrote a proprietary document entitled "Metrics Collections Instructions" for monitoring the progress of the Canadian Automated Air Traffic Control System project as part of my Natural Sciences and Engineering Research Council of Canada (NSERC) Industrial Undergraduate Student Research Award. The document was approved by Dr. K. Toth, the Quality Assurance Director, and subsequently included in the company's formal procedures. It has been used by Quality Assurance Engineers both weekly and monthly as a guide for metrics collections on the Canadian Automated Air Traffic Control System project.

AFFILIATIONS

International Society for Computational Biology (ISCB),
Society for Industrial and Applied Mathematics (SIAM),
American Physical Society (APS).

REFERENCES

Available upon request.