



compbio.cs.uic.edu

Tanya Y. Berger-Wolf

Department of Computer Science
University of Illinois at Chicago
851 S. Morgan St., Chicago, IL 60607-7053
ph: (312)413-8719
tanyabw@cs.uic.edu

Research Interests: Development and application of qualitative algorithmic methods to problems in population biology of plants, animals, and humans, from genetics to social interactions.

Education and Professional Preparation:

- 2004-2005 **Center for Discrete Mathematics and Theoretical Computer Science (DIMACS)**
NSF Postdoctoral Fellow
Computational epidemiology and population biology
Advisors: Simon A. Levin (Princeton) and S. (Muthu) Muthukrishnan (Rutgers)
- 2002-2004 **University of New Mexico**
NSF Postdoctoral Fellow
Computational methods for controlled breeding programs and phylogeny reconstruction
Advisors: Bernard M. E. Moret, David A. Bader
- 1996-2002 **University of Illinois, Urbana-Champaign**
Ph.D. in Computer Science, May 2002
Thesis: *Multichannel Communication and Graph Vertex Labeling*
Advisor: Edward M. Reingold
- 1991-1995 **Hebrew University, Jerusalem, Israel**
B.Sc., Computer Science and Mathematics (double major), July 1995

Employment:

- 2010– **Associate Professor**, Department of Computer Science, University of Illinois, Chicago
Adjunct Associate Professor, Department of Bioengineering, University of Illinois, Chicago
- 2005-2010 **Assistant Professor**, Department of Computer Science, University of Illinois, Chicago
Adjunct Assistant Professor, Department of Bioengineering, University of Illinois, Chicago
- 2004-2005 **Postdoctoral Fellow**
Center for Discrete Mathematics and Theoretical Computer Science (DIMACS)
- 2002-2004 **Postdoctoral Fellow**
Department of Computer Science and Laboratory for High-Performance Algorithm Engineering and Computational Molecular Biology, University of New Mexico
- 2001 **Visiting Lecturer**
Department of Computer Science, University of Illinois, Urbana-Champaign
- Aug 2000 **Research Assistant**
Sandia National Laboratory
- 1996-1998 **Teaching assistant**
Department of Computer Science, University of Illinois, Urbana-Champaign
- 1995-1996 **Research programmer**
Geographic Modeling Lab, University of Illinois, Urbana-Champaign
- 1994-1995 **GIS programmer**
Malam Group, Jerusalem, Israel.
- 1993-1994 **GIS programmer and administrator**
Hebrew University Geographic Information Systems Center, Jerusalem, Israel
Research Programmer
Ecology, Systematics and Evolution Dep., Hebrew University, Jerusalem, Israel
- 1992-1993 **Instructor**, extracurricular studies in mathematics,
Youth Science Center of the Hebrew University, Jerusalem, Israel

Awards and Honors:

- 2012 UIC Graduate Mentoring Award

2010	UIC INSPIRE Award [recognizes long-term, consistent, and outstanding professional service to the UIC community]
2009	UIC WOW Award [for concern and support for others and service above and beyond expectations]
2009	UIC Mentor of the Year Award
2009	UIC CoE Faculty Research Award
2008-2013	NSF Faculty Early CAREER Award
2007, 2012	UIC CoE Advisor Award
2004-2005	DIMACS NSF Postdoctoral Fellowship
1998-2000	NSF Graduate Fellowship
2001,2002	UIUC Outstanding Graduate Student Service Award
2000	Mavis Memorial Fund Scholarship (<i>Eng. Col. award for excellence in research and education</i>)
2000	C.W. Gear Outstanding Graduate Student Award

Publications:

Journals

- [1] F. Saeed, A. Perez-Rathke, J. Gwarnicki, **T. Y. Berger-Wolf**, A. Khokhar, "A high performance multiple sequence alignment system for pyrosequencing reads from multiple reference genomes", *Journal of Parallel and Distributed Computing*, Available online 16 September 2011, ISSN 0743-7315, 10.1016/j.jpdc.2011.08.001
- [2] C.-A. Chou, W. A. Chaovalitwongse, **T. Y. Berger-Wolf**, B. DasGupta, M. V. Ashley, "Capacitated Clustering Problem in Computational Biology: Combinatorial and Statistical Approach for Sibling Reconstruction", *Computers and Operations Research*, 39(3), March 2012, 609–619.
- [3] M. C. Crofoot, D. I. Rubenstein, A. S. Maiya, **T. Y. Berger-Wolf**, "Aggression, Grooming and Group-level Cooperation in White-faced Capuchins (*Cebus capucinus*): Insights from Social Networks", *American Journal of Primatology*, 73(8), 821-833, August 2011.
- [4] A. Anand, J. Anderson, **T. Y. Berger-Wolf**, "Predicting Orientation Selectivity in Primary Visual Cortex", *Journal of Vision* August 2, 2010 vol. 10 no. 7 article 936.
- [5] S. I. Sheikh, **T. Y. Berger-Wolf**, A. Khokhar, I. C. Caballero, M. V. Ashley, W. Chaovalitwongse, C.-A. Chou, B. DasGupta, "Combinatorial Reconstruction of Half-sibling Groups from Microsatellite Data", *Journal of Bioinformatics and Computational Biology: Selected Papers from CSB2009*, 8(2), Apr 2010, 337–56.
- [6] M. V. Ashley, **T. Y. Berger-Wolf**, W. Chaovalitwongse, B. DasGupta, A. Khokhar, S. I. Sheikh, "On Approximating An Implicit Cover Problem in Wild Population Study", *Discrete Mathematics, Algorithms and Applications*, (in press)
- [7] Habiba, **T. Y. Berger-Wolf**, Y. Yu, J. Saia, "Finding Spread Blockers in Dynamic Networks", *Advances in Social Network Mining and Analysis*, Lecture Notes in Computer Science, 5498, 55–76, Springer, 2010.
- [8] M. Lahiri, **T. Y. Berger-Wolf**, "Mining Periodic Behavior in Dynamic Social Networks", *Journal of Knowledge and Information Systems* 24(3): 467–498, 2010.
- [9] W. Chaovalitwongse, C.-A. Chou, **T. Y. Berger-Wolf**, B. DasGupta, S. I. Sheikh, M. V. Ashley, I. C. Caballero, "New Optimization Model and Algorithm for Sibling Reconstruction from Genetic Markers", *INFORMS Journal of Computing*, 22(2): 179–193, 2010.
- [10] M. V. Ashley, **T. Y. Berger-Wolf**, P. Berman, W. Chaovalitwongse, B. DasGupta, M.-Y. Kao, "On Approximating Four Covering and Packing Problems", *Journal of Computer and System Sciences*, 75 (5), 287–302, 2009
- [11] M. V. Ashley, I. C. Caballero, W. Chaovalitwongse, B. DasGupta, P. Govindan, S. I. Sheikh, **T. Y. Berger-Wolf**, "KINALYZER, A Computer Program for Reconstructing Sibling Groups", *Molecular Ecology Resources*, 9 (4), July 2009, 1127–1131.
- [12] **T. Y. Berger-Wolf**, S. I. Sheikh, B. DasGupta, M. V. Ashley, I. C. Caballero, W. Chaovalitwongse, S. L. Putrevu, "Reconstructing Sibling Relationships in Wild Populations", *Bioinformatics*, 23(13), i49–i56.
- [13] **T. Y. Berger-Wolf**, C. Moore, and J. Saia, "A computational approach to animal breeding" *Journal of Theoretical Biology*, 244(3), Feb 2007, 433–439.

- [14] W. Chaovalitwongse, **T. Y. Berger-Wolf**, B. DasGupta, and M. V. Ashley. "Set covering approach for reconstruction of sibling relationships", *Optimization Methods and Software (Special Issue on Systems Analysis, Optimization and Data Mining in Biomedicine)*, 22(1), Feb 2007, 11–24
- [15] **T. Y. Berger-Wolf**, W. E. Hart, and J. Saia. "Discrete sensor placement problems in distribution networks." *Journal of Mathematical and Computer Modelling*, 42 (13), Dec 2005, 1385–1396
- [16] **T. Y. Berger-Wolf** and E. M. Reingold. "Index assignment for multichannel communication under failure." *IEEE Transactions on Information Theory*, 48(10), Oct 2002, 2656–2668

Refereed Conferences and Workshops:

- [17] Chayant Tantipathananandh and **Tanya Y. Berger-Wolf**. "Finding Communities in Dynamic Social Networks". *Proceedings of the 11th IEEE International Conference on Data Mining (ICDM), December 2011, Vancouver, Canada*.
- [18] Habiba and **Tanya Y. Berger-Wolf**. "Working for influence: effect of network density and modularity on diffusion in networks", *Proceedings of the IEEE ICDM2011 Workshop on Data Mining in Networks*, December 2011.
- [19] Rajmonda Caceres, **Tanya Y. Berger-Wolf**, and Robert Grossman. "Temporal Scale of Processes in Dynamic Networks", *Proceedings of the IEEE ICDM2011 Workshop on Data Mining in Networks*, December 2011.
- [20] Arun Maiya and **Tanya Y. Berger-Wolf**. "Benefits of Bias: Towards Better Characterization of Network Sampling", *Proceedings of the 17th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), August 2011, San Diego, CA, 2011*.
- [21] Khairi Reda, Chayant Tantipathananandh, Andrew Johnson, Jason Leigh, **Tanya Berger-Wolf**. "Visualizing the Evolution of Community Structures in Dynamic Social Networks". *Proceedings of the EuroVis 2011–13th annual Visualization Symposium, June 2011, Bergen, Norway*
- [22] Mayank Lahiri, Chayant Tantipathananandh, Rosemary Warungu, Daniel I. Rubenstein, **Tanya Y. Berger-Wolf**. "Biometric Animal Databases from Field Photographs: Identification of Individual Zebra in the Wild". *Proc. of the ACM International Conference on Multimedia Retrieval (ICMR 2011), Trento, Italy, 2011*.
- [23] Arun Maiya and **Tanya Berger-Wolf**, "Expansion and Search in Networks". *Proceedings of the 19th ACM International Conference on Information and Knowledge Management (CIKM-10), October 2010, Toronto, Canada*
- [24] **Tanya Berger-Wolf**, Ilya R. Fischhoff, Dan I. Rubenstein, Siva R. Sundaresan, Chayant Tantipathananandh. "Dynamic Analysis of Social Networks of Equids". *Applications of Social Network Analysis (ASNA)*, September 2010.
- [25] Caitlin L. Barale, Ipek Kulahci, Habiba, Rajmonda Sulo, **Tanya Berger-Wolf**, and Daniel I. Rubenstein. "?????A social network approach to sheep movement and leadership". *Applications of Social Network Analysis (ASNA)*, September 2010.
- [26] Dan Brown and **Tanya Berger-Wolf**, "Discovering kinship through small subsets". *Proceedings of the Workshop on Algorithms in Bioinformatics (WABI-10), September 2010, Leeds, England*
- [27] Rajmonda Sulo, **Tanya Berger-Wolf**, and Robert Grossman. "Meaningful selection of temporal resolution for dynamic networks", *Proceedings of the 8th Workshop on Mining and Learning with Graphs (MLG)*, Aug. 2010
- [28] Arun Maiya and **Tanya Berger-Wolf**, "Online Sampling of High Centrality Individuals in Social Networks". *Proceedings of the 14th Pacific-Asia Conference on Knowledge Discovery and Data Mining (PAKDD-10), June 2010, Hyderabad, India*
- [29] Arun Maiya and **Tanya Berger-Wolf**, "Sampling Community Structure". *Proceedings of WWW 2010, April 2010, Raleigh, NC*
- [30] Saad Sheikh, Ashfaq Khokhar, and **Tanya Berger-Wolf**, "Efficient and scalable parallel reconstruction of sibling relationships from genetic data in wild populations". *Proceedings of the 9th IEEE International Workshop on High Performance Computational Biology (HiCOMB-10), April 2010, Atlanta, GA*
- [31] Khairi Reda, Chayant Tantipathananandh, **Tanya Y. Berger-Wolf**, Jason Leigh, Andrew E. Johnson, "SocioScape - a Tool for Interactive Exploration of Spatio-Temporal Group Dynamics in Social Networks", *Proceedings of the IEEE Information Visualization Conference (INFOVIS '09), Atlantic City, New Jersey, 2009*.
- [32] **Tanya Y. Berger-Wolf**, Mayank Lahiri, Chayant Tantipathananandh, and David Kempe, "Finding Structure in Dynamic Networks", *Proceedings of the Workshop on Information in Networks (WIN-09), September 2009, New York, NY*

- [33] Arun S. Maiya and **Tanya Y. Berger-Wolf**, “Inferring the Maximum Likelihood Hierarchy in Social Networks”. *Proceedings of the International Symposium on Social Intelligence and Networking (SIN-09), August 2009, Vancouver, Canada*
- [34] Saad I. Sheikh, **Tanya Y. Berger-Wolf**, Ashfaq Khokhar, Isabel C. Caballero, Mary V. Ashley, Wanpracha Chaovalitwongse, Bhaskar DasGupta, “Combinatorial Reconstruction of Half-Sibling Groups”. *Proceedings of the 8th International Conference on Computational Systems Bioinformatics (CSB), August 2009, Stanford, CA*, Peter Markstein and Ying Xu (editors), Life Science Society, 59–67. (Full version invited to a special issue of Journal of Bioinformatics and Computational Biology)
- [35] C. Tantipathananandh, **T. Y. Berger-Wolf**, “Algorithms for Identifying Dynamic Communities”, *Proceedings of the 15th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), June 2009, Paris, France*
- [36] M. V. Ashley, **T. Y. Berger-Wolf**, W. Chaovalitwongse, and B. DasGupta, A. Khokhar, S. I. Sheikh, “On Approximating An Implicit Cover Problem in Biology”, *Proceedings of the 5th International Conference on Algorithmic Aspects in Information and Management (AAIM), June 2009, San Francisco, CA*
- [37] M. Lahiri, **T. Y. Berger-Wolf**, “Mining Periodic Behavior in Dynamic Social Networks”, *Proceedings of the 8th IEEE International Conference on Data Mining (ICDM), December 2008, Pisa, Italy*, 373–382. (Full version invited to a special issue of Journal of Knowledge and Information Systems)
- [38] M. Lahiri, A. Maiya, R. Sulo, Habiba and **T. Y. Berger-Wolf**, “The Impact of Structural Changes on Predictions of Diffusion in Networks”, *ICDM Workshop on Analysis of Dynamic Networks, December 2008, Pisa, Italy*.
- [39] Habiba, **T. Y. Berger-Wolf**, Y. Yu, J. Saia, “Finding Spread Blockers in Dynamic Networks”, *Proceedings of the 2nd ACM SIGKDD Workshop on Social Network Mining and Analysis (SNA-KDD), August 2008, Las Vegas, NV*, (full version invited to a special issue of Springer LNCS series publication)
- [40] S. Sheikh, **T. Y. Berger-Wolf**, M. V. Ashley, I. C. Caballero, W. Chaovalitwongse, and B. DasGupta, “Error Tolerant Siblings Reconstruction in Wild Populations”, *Proceedings of the 7th International Conference on Computational Systems Bioinformatics (CSB), August 2008, Stanford, CA*, 273–284. Peter Markstein and Ying Xu (editors), 273–284, World Scientific Publishers, 2008.
- [41] S. I. Sheikh, **T. Y. Berger-Wolf**, A. A. Khokhar, and B. DasGupta, “Consensus Methods for Reconstruction of Sibling Relationships from Genetic Data”, *Proceedings of the AAAI Multidisciplinary Workshop on Advances in Preference Handling (MPREF), July 2008, Chicago, IL*
- [42] Habiba, **T. Y. Berger-Wolf**, “Graph Theoretic Measures for Identifying Effective Blockers of Spreading Processes in Dynamic Networks”, *Proceedings of the MLG-ICML Workshop on Machine Learning on Graphs, July 2008, Helsinki, Finland*.
- [43] C. Tantipathananandh, **T. Y. Berger-Wolf**, and D. Kempe, “A Framework For Community Identification in Dynamic Social Networks”, *Proceedings of the 13th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), August 2007, San Jose, CA, USA*, 717–726.
- [44] **T. Y. Berger-Wolf**, S. I. Sheikh, B. DasGupta, M. V. Ashley, I. C. Caballero, W. Chaovalitwongse, S. L. Putrevu, “Reconstructing Sibling Relationships in Wild Populations”, *15th Annual International Conference on Intelligent Systems for Molecular Biology (ISMB), July 2007, Vienna, Austria* [same as Bioinformatics publication in journals].
- [45] M. Lahiri and **T. Y. Berger-Wolf**, “Structure Prediction in Temporal Networks using Frequent Subgraphs”, *IEEE Symposium on Computational Intelligence and Data Mining (CIDM), April, 2007, Honolulu, Hawaii*
- [46] S. Sheikh, **T. Y. Berger-Wolf**, W. Chaovalitwongse, B. DasGupta, and M. Ashley, “Reconstructing Sibling Relationships from Microsatellite Data”, *European Conf. on Computational Biology (ECCB), Jan 2007, Eilat, Israel*
- [47] M. Laifenfeld, A. Trachtenberg, and **T. Y. Berger-Wolf**, “Identifying Codes and the Set Cover Problem”, *44th Annual Allerton Conf. on Communication, Control, and Computing, Sept 2006, Allerton, IL*
- [48] **T. Y. Berger-Wolf** and J. Saia, “A framework for analysis of dynamic social networks”, *Proceedings of the 12th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining (KDD), August 2006, Philadelphia, PA, USA*, 523–528
- [49] **T. Y. Berger-Wolf**, B. DasGupta, W. Chaovalitwongse, and M. V. Ashley. “Combinatorial reconstruction of sibling relationships” *Proceedings, 6th International Symposium on Computational Biology and Genome Informatics (CBGI), Salt Lake City, Utah, July 21 - 26, 2005*, 1252-1255

- [50] **T. Y. Berger-Wolf**. “Online Consensus and Agreement of Phylogenetic Trees.” In Inge Jonassen, Junhyong Kim (Eds.): *Algorithms in Bioinformatics, 4th International Workshop (WABI), Bergen, Norway, September 17-21, 2004, Proceedings. Lecture Notes in Computer Science, 3240, Springer, 350–361*
- [51] **T. Y. Berger-Wolf** and E. M. Reingold. “Optimal multichannel communication under failure.” *Proceedings, 10th Annual ACM-SIAM Symposium on Discrete Algorithms (SODA)*, 1999, 858–859

Book Chapters:

- [52] **T. Y. Berger-Wolf**, C. Tantipathananandh, and D. Kempe, “Community Identification in Dynamic Social Networks”, *Link Mining: Models, Algorithms and Applications*, Philip S. Yu, Christos Faloutsos, and Jiawei Han (Editors), Springer, 2010.
- [53] M. V. Ashley, **T. Y. Berger-Wolf**, I. C. Caballero, W. Chaovalitwongse, B. DasGupta, and S. I. Sheikh. “Full Sibling Reconstruction in Wild Populations From Microsatellite Genetic Markers”. *Computational Biology: New Research*, pp. 231–258, Nova Publishers.

Tutorials:

- [54] **T. Y. Berger-Wolf**, T. M. Przytycka, and M. Singh. “Dynamics of Biological Networks”. *Pacific Symposium on Biocomputing (PSB)*, January 2009 and January 2010.

Book Reviews:

- [55] Invited book review of “Bioconsensus” (DIMACS Series in Discrete Mathematics and Theoretical Computer Science, Vol. 61) edited by M. F. Janowitz, F.-J. Lapointe, F. R. McMorris, B. Mirkin, and F. S. Roberts, *Journal of Systematic Biology*, 53(3), June 2004, 515–517

Others (not published elsewhere):

- [56] Habiba and **T. Y. Berger-Wolf**. “Maximizing the Extent of Spread in a Dynamic Network.” *DIMACS Technical Report, 2007-20, 2007*
- [57] Habiba, C. Tantipathananandh, and **T. Y. Berger-Wolf**. “Betweenness Centrality Measure in Dynamic Networks.” *DIMACS Technical Report, 2007-19, 2007*
- [58] **T. Y. Berger-Wolf** and J. Saia. “Critical Groups in Dynamic Social Networks” *DIMACS Technical Report, 2005-26 July 2005*
- [59] **T. Y. Berger-Wolf**, T. Williams, B. M. E. Moret, and T. Warnow, “An Experimental Evaluation of Phylogenetic Consensus Methods,” *Technical Report TR-CS-2003-19, University of New Mexico, 2005*
- [60] **T. Y. Berger-Wolf**, T. Williams, B. M. E. Moret, U. Roshan, and T. Warnow, “The Relationship Between Maximum Parsimony Scores and Phylogenetic Tree Topologies,” *Technical Report TR-CS-2004-04 UNM*

External Research Funding:

- 2011-2013 NSF IIS-1124495, *EXP: Using technologies to engage learners in the scientific practices of investigating rich behavioral and ecological questions*, PI: T. Moher, co-PIs: L. Lyons, **T.Y. Berger-Wolf**, B. Reiser, J. Brown, [\$ 549,467]
- 2011-2012 NSF OCI-1152895, *EAGER: Field Computational Ecology Course*, PIs: **T.Y. Berger-Wolf**, D.I. Rubenstein, [\$ 75,843]
- 2011-2013 NSF IIS-106468, *Scalable kinship inference in wild populations across years and generations*, PI: **T.Y. Berger-Wolf**, co-PIs: M. V. Ashley, B. DasGupta, A. Khokhar, W. Chaovalitwongse, [\$954,730]
- 2010-2012 NSF ARI-0963278, *The Incus Facility: An Integrated UIC Cyberinfrastructure for High-Performance Computing and Networking*, PI: R. Grossman, co-PIs: P. Yu, **T. Y. Berger-Wolf**, J. Leigh, A. Kassem, [\$1,987,49]
- 2008-2010 NSF BPC-0837480, *BPC-A: Improving Metropolitan Participation to Accelerate Collaborative Computing Throughout and Success (IMPACTS)*, PIs: D. Reed, R. Greenberg, S. Kamin, C. Hood, co-PIs: R. Sloan, **T.Y. Berger-Wolf**, L. Lyons, [\$60,000]
- 2008-2013 NSF IIS-0747369, *CAREER: Computational Tools for Population Biology*, PI: T.Y. Berger-Wolf, [\$504,930]
REU Supplement, PI: **T.Y. Berger-Wolf**, [\$16,000]

- 2007-2011 NSF IIS-0705822, *III-CXT: Collaborative Research: Computational Methods for Understanding Social Interactions in Animal Populations*, PIs: **T.Y. Berger-Wolf**, D.I. Rubenstein, J. Saia, [\$899,017]
REU Supplement, PI: **T.Y. Berger-Wolf**, [\$16,000]
- 2006-2010 NSF IIS-0612044, *Collaborative Research: SEI: Computational Methods for Kinship Reconstruction*, PI: **T.Y. Berger-Wolf**, co-PIs: M. V. Ashley, B. DasGupta, W. Chaovalitwongse, [\$795,822]
- 2006-2007 Microsoft award 14936, *Computational Tools for Population Biology*, [\$91,000]

Invited Talks (last 5 years):

Talks on “*Computational Insights into the Social Life of Zebras (and other animals)*”, “*Computational Analysis of Dynamic Social Networks*” and “*Computational Behavioral Ecology*”

- Jun 2012 Purdue Symposium on Statistics, Purdue University
- May 2012 Workshop on Working with User Data, Institute for Mathematics and Its Applications (IMA), University of Minnesota
- Apr 2012 Graph Exploitation Symposium (GraphEx), MIT Lincoln Laboratory
- Mar 2012 Center for Integrative Neuroscience and Neuroengineering Seminar Series, University of Chicago
- Mar 2012 University of Iowa Computing Conference
- Mar 2012 Workshop: “Network Links: Connecting Social, Communication and Biological Network Analysis”, Institute for Mathematics and Its Applications (IMA), University of Minnesota
- Feb 2012 Second IEEE International Conference on Computational Advances in Bio and medical Sciences (ICCABS 2012)
- Feb 2012 Applied Mathematics Colloquium, Illinois Institute of Technology, Chicago
- Jan 2012 Computational Ecology research group, Microsoft Research, Cambridge, UK
- Dec 2011 Department of Computer Science, University of British Columbia

“*Computational Insights into Population Biology*”

- Sep 2011 RPI-NSF Workshop on Multiscale Modeling of Complex Data, Rensselaer Polytechnic Institute (RPI), Troy, NY
- Apr 2011 Department of Computer Science, Rutgers University
- Nov 2010 Department of Computer Science, Notre Dame University
- Apr 2010 David R. Cheriton School of Computer Science, Waterloo
- Apr 2010 École Polytechnique Fédérale du Lausanne
- Feb 2008 Department of Computer Science, Wayne State University

“*Computational Analysis of Dynamic Interaction Networks*”

- Sep 2010 Workshop on Dynamic Networks and Knowledge Discovery (DyNaK 2010) at ECML/PKDD, Barcelona, Spain (**keynote speaker**)
- Sep 2010 École Polytechnique, France
- Jun 2010 SIAM Conference on Discrete Mathematics, Austin, TX
- Jun 2010 Expert Speaker Series, Data Sciences Summer Institute, University of Illinois at Urbana-Champaign
- May 2010 Hamilton Institute, National University of Ireland
- Nov 2009 Argonne National Laboratory
- Nov 2009 Mathematical Biology and Ecology Seminar, Georgia Tech
- Nov 2009 Workshop on Natural Algorithms, Princeton University
- Oct 2009 The Center for Information and Systems Engineering (CISE), Boston University
- Sept 2009 Sandia National Laboratory
- May 2009 Department of Computer Science, University of Minnesota
- Apr 2009 Applied Mathematics Colloquium, IIT, Chicago
- Oct 2008 Bioinformatics Colloquium, UIUC
- Jul 2008 SIAM Annual Meeting 2008
- Apr 2008 Microsoft Research
- Mar 2008 Catalyzing Collaborations between Industry and Academia, Rush Hospital, Chicago, IL

“*Inferring Communities in Dynamic Social Networks*”

- May 2009 Information Science and Technology (ISAT) workshop on Quasi-experimental Designs for Large-Scale Spatio-Temporal Data

Panel member: “*Social Networks and Data Mining: Where’s the Beef?*”

- Dec 2008 8th IEEE International Conference on Data Mining (ICDM 2008)

“Reconstruction of Sibling Relationships in Wild Populations”

Aug 2008 DIMACS Workshop on Computational Issues in Genetic Epidemiology

“Computational Analysis of Dynamic Social Networks” (keynote speaker)

Feb 2008 Dynamically Evolving Large-scale Information Systems (DELIS) Workshop, Universitat Politècnica de Catalunya, Barcelona, Spain

“Computational Insights into the Social Life of Zebras”

Nov 2007 Department of Computer Science, Loyola University

Nov 2007 Department of Computer Science, U New Mexico

Nov 2007 Santa Fe Institute, Santa Fe, New Mexico

Teaching Experience:

Spr 10, 12	<i>Field Computational Population Biology</i> (UIC and Princeton graduate, taught in Kenya and UIC)
Fall 09, 10, 11	<i>Discrete Structures II</i> (UIC undergraduate)
Fall 2008	<i>Advanced Algorithm Analysis</i> (UIC, graduate)
Spr 2007	<i>Computational Analysis of Networks</i> (UIC, graduate)
Fall 05, 06, 07, 11 Spr 2008	<i>Computer Algorithms I</i> (UIC, graduate and senior undergrad)
Spr 06, 09, 11	<i>Algorithms in Computational Biology</i> (UIC, graduate)
Fall 2003	<i>Inexact Algorithms</i> (UNM, advanced graduate)
Fall 2001	<i>Numerical Linear Algebra</i> (UIUC, graduate and senior undergraduate)
Sum 2001	<i>Introduction to Theory of Computation</i> (UIUC, introductory undergraduate)
Sum 1999	<i>Computer Science Unplugged</i> (UIUC, discover course for non-technical majors)
Fall 1997	<i>Numerical Analysis</i> (UIUC, graduate and senior undergraduate, TA)
Sum 1997	<i>Combinatorial Algorithms</i> (UIUC, graduate and senior undergraduate, TA)
Spr 1997	<i>Discrete Mathematical Structures</i> (UIUC, introductory undergraduate, TA)
Fall 1996	<i>Introduction to Computer Science</i> (UIUC, introductory for engineering majors, TA)

Students Supervised:

Current PhD and MS students:

- Habiba, Ph.D. expected graduation 2012 [Fulbright Scholar, Chancellor Student Leadership Award 2009, 2010, 50 for the Future 2011]
- Chayant Tantipathananandh, Ph.D. expected graduation 2012 [Best TA Spring 2011]
- Rajmonda Sulo (co-advising with Robert Grossman), Ph. D. expected graduation 2012
- Marco Maggioni (co-advising with Jie Liang), Ph.D. expected graduation 2013 [Chancellor Graduate Research Award 2011]
- Jen Anderson, M.S. expected graduation May 2012 [double MS, Psychology]
- Islam Ismailov, M.S. expected graduation 2012 [Fulbright Scholar]

Graduated students:

- Anushka Anand (Leland Wilkinson co-advisor), Ph. D. 2012 [Anita Borg Institute Board 2011, Chancellor Student Leadership Award 2008, 2010, 50 for the Future 2011]. Thesis: *Visual Pattern Detection in High-dimensional Spaces*. [Tableau]
- Arun Maiya, Ph.D. 2011 [Computational Transportation Science IGERT Fellow 2007–2008]. Thesis: *Sampling and Inference in Complex Networks* [Institute for Defense Analysis]
- Mayank Lahiri, Ph.D. 2011 [Provost's Award for Graduate Research 2010, Dean's Scholar 2009–2010]. Thesis: *Measuring and mining dynamic networks* [Facebook]
- Saad Sheikh (Ashfaq Khokhar co-advisor), Ph.D. 2009 [Fulbright Scholar]. Thesis: *Combinatorial Methods for Sibling Reconstruction* [University of Florida, Postdoc]

- Alan Perez-Rathke, M.S. May 2011 [Chicago's 50 For the Future, UIC CoE Commencement Speaker]. Thesis: *Parallel, Error-Tolerant Sibling Reconstruction for Wild Populations Using Microsatellite Markers*
- Jaroslaw Gwarnicki, M.S. May 2011. Project. [NetherRealm Studios]
- Ramji Krishnan, M.S. Dec 2010. Project *KINALYZER: A Web-based Service for Sibship Reconstruction* [RemedyEHR]
- Priya Govindan, M.S. May 2009. Thesis: *Inferring Network Structure Using Maximum Likelihood Approach* [Rutgers U PhD]
- Chayant Tantipathananandh, M.S. May 2007. Thesis: *Community Identification in Dynamic Social Networks Using Generalized Coloring* [UIC PhD]
- Andrea Franchescini, M.S. May 2007. Thesis: *A software architecture for the analysis of genomic protein family and domain controlled annotations*
- Vinodh Periyasamy, M.S. May 2008. Project: *Dynamic Graph Generator: Generic graph simulator for dynamic network* [Goldman Sachs]
- Satya Lahari Putrevu, M.S. December 2007. Project: *Sibling Reconstruction Method Validation* [Microsoft]
- Srikant Vemuri, M.S. December 2007. Project: *Dynamic Network Visualization Tool* [Terra Matrix Media]

Member of Dissertation Committee:

Current:

- Elizabeth Miller, Ph. D. expected graduation 2015, Notre Dame Biology (Elizabeth Archie advisor)
- Damien Roquero, Ph. D. expected graduation 2012, UIC BioE (Yang Dai advisor)
- Daniel Ayala, Ph. D. expected graduation 2012, UIC CS (Ouri Wolfson advisor)
- Paul Varke, Ph. D. expected graduation 2011, UIC CS. (Piotr Gmytrasiewicz advisor)
- Jacob Joseph, Ph. D. expected graduation 2012, Joint Carnegie Mellon University - University of Pittsburgh Ph.D. Program in Computational Biology. (Dannie Durand advisor)
- Jonathan Waxman, Ph.D. expected graduation 2012, UIC ECE. (Daniel Graupe and David Carley advisors)
- Matthew Carson, Ph.D. expected graduation 2011, UIC BioE. Thesis: *Investigations of Gene Regulation Mechanisms Using Machine Learning and Generative Network Models* (Hui Lu advisor)
- Hilary Osborne, Ph.D. expected graduation 2012, UIC Biology. Thesis: *Holes: When, where, and why aardvarks dig* (Joel Brown advisor)

Graduated:

- Hammad Naveed, Ph. D. May 2012, UIC Bioengineering. (Jie Liang advisor)
- Isabel Caballero, Ph. D. December 2011, UIC Biology (Mary Ashley advisor)
- Chun-An Chou, Ph. D. August 2011, Rutgers University, Department of Industrial and Systems Engineering. (Wanpracha Chaovalitwongse advisor)
- Fatemeh Vafae, Ph.D. May 2011, UIC CS. Thesis: *Controlling Genetic Operator Rates in Evolutionary Algorithms* (Peter Nelson advisor)
- Songqing Zhao, Ph.D. 2010, UIC ECE. Thesis: *Multiple Description Coding over Multiple Channels* (Rashid Ansari advisor)
- Ilaria Bordino, Ph. D. May 2010, Sapienza University of Rome and Pompeu Fabra University of Barcelona. Thesis: *Graph Mining and its applications to Web Search*, (Stefano Leonardi and Ricardo Baeza-Yates advisors)
- Xu Chen, Ph.D. May 2010, UIC ECE. (Dan Schonfeld and Ashfaq Khokhar advisors)
- Junlan Yang, Ph.D. May 2010, UIC ECE. Thesis: *Virtual Video Enhancement for Mobile Cameras: Stabilization, Auto-Focus and Super-resolution* (Dan Schonfeld advisor)
- Fahad Saeed, Ph.D. May 2010, UIC ECE. Thesis: *High Performance Algorithms for Computational Biology*, (Ashfaq Khokhar advisor)
- Arthur Nsamedjeu, M.S. May 2010, Politecnico di Milano and UIC. Thesis: *Self-Adaptive Synchronization Mechanisms for Runtime Applications Performance Improvement*, (Marco Santambrogio advisor)
- Xiaowen Ding, Ph.D. May 2010, UIC. Thesis: *Opinion and Product Name Mining on Web Content*, (Bing Liu advisor)
- Amitabh Trehan, Ph.D. May 2010, University of New Mexico. Thesis: *Self-Healing Dynamic Networks* (Jared Saia advisor)

- Chad A. Williams, Ph.D. May 2010, UIC. Thesis: *A Data Mining Approach to Rapidly Learning Traveler Activity Patterns for Mobile Applications*, (Peter Nelson advisor)
- Marina Langlois, Ph.D. December 2009, UIC. Thesis: *Horn Formulas: Problems and Applications*, (Robert Sloan advisor)
- Khairi Reda, M.S. July 2009, UIC CS. Thesis: *SocioScape - Visual Analysis of Spatio-Temporal Group Dynamics in Social Networks* (Jason Leigh advisor)
- Pan Pan, Ph.D. May 2009, UIC ECE. Thesis: *Optimal Resource Allocation and High-Order Particle Filtering for Video Tracking*, (Dan Schonfeld advisor)
- Carlos Caicedo, Ph.D. January 2009, UIC ECE. Thesis: *Motion control and coordination algorithms for robotic networks* (Miloš Žefran advisor)
- Guanrao Chen, Ph.D. 2009, UIC CS. Thesis: *Exploring Topologies of Genetic Regulatory Networks for Better Reconstruction*, (Yang Dai advisor)
- Harish Naik, M.S. October 2008, UIC. Thesis: *Parallel Implementation of Community Identification in Dynamic Social Networks Using MPI*, (Mitchell Theys advisor)
- Fabio Cancaré, M.S. May 2008, Politecnico di Milano and UIC ECE. Thesis: *Specifications and Modeling for Dynamic Reconfigurable Systems* (Marco Santambrogio and Shantanu Dutt advisors)
- Peng Fan, Ph.D. December 2007, UIC. Thesis: *Design and Analysis of Clustering Frameworks in Vehicular Ad-hoc Networks*, (Peter Nelson advisor)
- Waseem Ahmad, Ph.D. October 2007, UIC. Thesis: *TRIUMF: A context-aware trusted Middleware for Secure and Reliable Collaborative Computing*, (Ashfaq Khokhar advisor)
- Zhengdeng Lei, Ph.D. September 2007, UIC. Thesis: *Genome-wide Computational Prediction of Protein Localization*, (Yang Dai advisor)
- Nicholas D. Pattengale, M.S. April 2005, University of New Mexico. Thesis: *Tools for Phylogenetic Post Processing*, (Bernard M. E. Moret advisor)
- Sunghee Lee, M.S. June 2005, University of New Mexico. Thesis: *Approximate Bottom Line DEE (Dead End Elimination): Hybrid Bottom Line DEE and Split DEE*, (Bernard M. E. Moret advisor)

Service and Volunteer Activities (last 5 years):

Member of the Editorial Board:

International Journal of Knowledge Discovery in Bioinformatics

Program Committee Member:

BCB-12 ACM Conference on Bioinformatics, Computational Biology and Biomedicine (*area chair for Comparative genomics, population & cancer genomics, evolution*)

ICDM-12 IEEE International Conference on Data Mining 2012

KDD-12 18th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 2012

ISMB

ECML-PKDD-12: Program Committee Area Chair

BioComp

SDM-12 SIAM Conference on Data Mining 2012

WABI-11 11th Workshop on Algorithms in Bioinformatics 2011

NEMO-11 ECML-PKDD Workshop on Finding patterns of human behaviors in Network and Mobility

ICDM-11 IEEE International Conference on Data Mining 2011

KDD-11 17th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 2011

WAW-11 8th Workshop on Algorithms and Models for the Web Graph 2011

BCB-11 ACM Conference on Bioinformatics, Computational Biology and Biomedicine 2011 (*vice chair for Medical Informatics and Translational Bioinformatics*)

AAAI-AIW-11 AAAI Special Track on AI and the Web, AAAI 2011

WAW-10 7th Workshop on Algorithms and Models for the Web Graph 2010

ECML/PKDD-DyNak-10, Workshop on Dynamic Networks and Knowledge Discovery 2010

SOMA-10 Workshop on Social Media Analytics 2010

WABI-10 10th Workshop on Algorithms in Bioinformatics 2010

ICDM-10 IEEE International Conference on Data Mining 2010

MLG-10 8th International Workshop on Mining and Learning with Graphs 2010

KDD-10 16th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 2010

ICML-10 27th International Conference on Machine Learning 2010

WSDM-10 3rd ACM International Conference on Web Search and Data Mining 2010

ECML/PKDD-09 European Conference on Machine Learning and Principles and Practice of Knowledge Discovery in Databases 2009
SocialCom-09 IEEE International Conference on Social Computing 2009
MLG-09 7th International Workshop on Mining and Learning with Graphs 2009
WABI-09 9th Workshop on Algorithms in Bioinformatics 2009
CASoN-09 International Conference on Computational Aspects of Social Networks 2009
ISBRA-09 5th International Symposium on Bioinformatics Research and Applications 2009
PAKDD-09 13th Pacific-Asia Conference on Knowledge Discovery and Data Mining 2009

ICDM-08 IEEE International Conference on Data Mining 2008
SNA-KDD-08 2nd International Workshop on Social Network Mining and Analysis 2008
KDD-08 14th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining 2008
ISBRA-08 4th International Symposium on Bioinformatics Research and Applications 2008

BIBM-07 IEEE International Conference on Bioinformatics and Biomedicine 2007
AAAI-07 Workshop on Preference Handling for Artificial Intelligence 2007

Member of the ACM SIGKDD Doctoral Dissertation Award Committee 2009-2012

Meetings and Sessions Organized and Chaired:

SOMA: KDD Workshop on Social Media Analytics, August 2012
NSF Workshop on Algorithms in the Field (W8F), May 2011
Pacific Symposium on Biocomputing (PSB) Session on Dynamics of Biological Networks, January 2010
SIAM Conference on Data Mining (SDM) invited Workshop on Analysis of Dynamic Networks, April 2009
Pacific Symposium on Biocomputing (PSB) Session on Dynamics of Biological Networks, January 2009
International Conference on Data Mining (ICDM) Workshop on Analysis of Dynamic Networks, December 2008
INFORMS National Meeting Special Session on Population Genetics (invited), October 2008
DIMACS Workshop on Computational Analysis of Dynamic Interaction Networks, September 2007
SFI-DIMACS Workshop on The Evolution of Gene Regulatory Logic, January 2006
SIAM Conference on Discrete Mathematics Session on Graph Isoperimetric Problems, June 2002

Session on Prediction Models, ACM-SIGKDD Conference on Data Mining and Knowledge Discovery 2008
Session on Computational Phylogenetics, Workshop on Bioinformatics (WABI) 2004

Reviewer for: Intelligent Data Analysis (IOS Press) - Special Issue on Dynamic Networks and Knowledge Discovery, Transactions on Knowledge Discovery from Data, Data Mining and Knowledge Discovery (DAMI), Advances in Bioinformatics (ABI), IEEE Internet Computing, Knowledge and Information Systems (KAIS), Israel Science Foundation (ISF), IEEE/ACM Transactions on Knowledge Discovery and Data Mining (TKDD), IEEE/ACM Transactions on Computational Biology and Bioinformatics (TCBB), Social Networks, Workshop on Social Networks (WOSN), Journal on Combinatorial Optimization (JOCO), ACM-SIAM Symposium on Discrete Algorithms (SODA), International Journal of Modern Physics, US-Israel Binational Science Foundation, Workshop on Experimental Algorithms (WEA), IEEE Transactions on Information Theory, Journal of Parallel and Distributed Computing, Hawaii International Conference on System Sciences (HICSS), INFORMS Journal of Computing, Journal of Discrete Algorithms, NSF panels, DIMACS series, Journal of Optimization Methods and Software (OMS), Theory of Computing Systems (TOCS), IEEE International Conference on Networking, Sensing, and Control (ICNSC), IEEE Transactions on Parallel and Distributed Systems, Journal of Agricultural, Biological and Environmental Statistics, Journal of Theoretical Biology, International Conference on Distributed Computing Systems (ICDCS), Algorithmica, Tools and Algorithms for the Construction and Analysis of Systems (TACAS), European Joint Conferences on Theory and Practice of Software (ETAPS)

University Committee Service:

Departmental Committee for Outreach and Undergraduate Recruiting, 2011-present
Faculty Advisor to Women in CS, UIC, 2007-present
Departmental Graduate Committee, UIC, 2009-present
Undergraduate Committee, UIC, 2005-2007, 2010-2011
University Search Committee for Vice Chancellor for Academic Affairs, UIC, 2010-2011
Member of the Advisory Board, UIC Center for Research on Women and Gender (CRWG), 2009
Faculty Senate, member of Faculty Affairs Committee, UIC, 2007-2009
Faculty Search Committee in Learning Sciences and Computer Science, UIC, 2007-2008
Departmental Advisory Committee, UIC, 2006-2008
Colloquium Committee, UIC, 2006-2007
Graduate Study Committee, UIUC, 1999-2000
Fellowships, Awards, and Admissions Committee, UIUC, 1998-1999

Outreach and Community Service:

UIC Girls in CS Day, co-organized by UIC WISE, Department of Computer Science and Google, 2011.
Instructor and UIC team leader for the "Expanding Your Horizons" Career Day for female highschool students, University of Illinois, Springfield, 2010.

Member of the Advisory Board, Avyna Inc., 2007-present
Advisory Member, Loyola University Computer Science Outreach Program, 2007-present
Panel Member, Women in Science and Engineering System Transformation (WISEST) Postdoctoral Workshop, UIC, 2007
Participating Scientist, City of Chicago "Science in the City" program, 2007
Guest Instructor, Summer SuperMath Elementary School District 97 Program, Oak Park, IL, 2007-2009
Faculty Mentor, Grace Hopper Celebration student team, UIC, 2006, 2007
Co-founder and president, Women in Computer Science (WCS) Organization, UIUC, 2000-2001
Mentor in the Women in Engineering (WIE) Mentoring Program, UIUC, 1999-2000
Instructor, Camp 2000 Science and Engineering Girls Summer Camp, 1998-2001
Instructor for the Worldwide Youth in Science and Engineering (WYSE) "Exploring Your Options" Summer Program, UIUC, 1997-1999.
Instructor for the Math and Science Day, Judah Christian School, Champaign, 1999.
Participant and instructor for the "Expanding Your Horizons" Career Day for female highschool students, Illinois State University, Normal, IL, 1999, 2000.
Participant and instructor for the Engineering Open House "Grade School Village", UIUC, 1998-2001
Participant and instructor, GrrrIFest, Champaign-Urbana, 2001.