

---

## EDUCATION

---

### Cornell University, Ithaca, NY

- Ph.D. in Electrical and Computer Engineering, Jan. 2015.  
*Thesis Title:* Optimal Topologies and Algorithms for Minimizing Data Retransmissions in Wireless Networks.  
*Thesis Advisor:* Prof. Zygmunt J. Haas.
- M.S. in Electrical and Computer Engineering, Jan. 2014.

### SUNY: College at Brockport, Brockport, NY

- B.S. in Computer Science, B.S. in Mathematics, Minor in Physics, May 2009, *Summa Cum Laude*.

---

## PUBLICATIONS

---

### Journals

- *Malaria elimination campaigns in the Lake Kariba region of Zambia: a spatial dynamical model*, Milen Nikolov, Caitlin A. Bever, Alexander Upfill-Brown, Busiku Hamainza, John M. Miller, Philip A. Eckhoff, Edward A. Wenger, Jaline Gerardin, *The Lancet Global Health*. *submitted*.
- *Optimal Topology for Relays in Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, *IEEE Transactions on Wireless Communications*, *to appear*, Feb. 2016.
- *Towards Optimal Broadcast in Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, *IEEE Transactions on Mobile Computing*, vol.13, no.11, Nov. 2014.
- *Encoded Sensing for Energy Efficient Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, *ACM Transactions on Sensor Networks*, *submitted*.

### Conferences and Workshops, Peer-Reviewed

- *Collaborating with Correlation for Energy Efficient WSN*, Milen Nikolov and Zygmunt J. Haas, ACM MobiCom International Workshop on Mission-Oriented Wireless Sensor Networking, Istanbul, Turkey, Aug. 2012.
- *Towards Optimal Broadcast in Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems, Miami Beach, FL, Nov. 2011.
- *Analysis of Application-Aware On-Chip Routing under Traffic Uncertainty*, N. Michael, Milen Nikolov, Ao Tang, G. E. Suh, and C. Batten, ACM/IEEE International Symposium on Networks-on-Chip, Pittsburgh, PA, May 2011.

---

## POSTERS AND PRESENTATIONS

---

- *Modeling the Optimal Intervention Mix for Malaria Elimination in Different Spatially Connected Topologies*, Milen Nikolov, Jaline Gerardin, Alexander Upfill-Brown, Caitlin Beaver, Busiku Hamainza, John Miller, Philip A. Eckhoff, Edward A. Wenger, ASTMH 64<sup>th</sup> Annual Meeting, Poster Session 135, Philadelphia, PA, Oct. 2015.
- *Designing a Sufficient Surveillance System against Re-establishment of Malaria in a Spatially Connected Model*, Philip A. Eckhoff, Caitlin Beaver, Jaline Gerardin, Milen Nikolov, André Lin Ouédraogo, Edward A. Wenger, ASTMH 64<sup>th</sup> Annual Meeting, Poster Session 135, Philadelphia, PA, Oct. 2015.
- *Mechanisms for Long-Tailed Degree Distributions in Social Interaction Networks*, Milena Tsvetkova and Milen Nikolov, International Sunbelt Social Networks Conference, Redondo Beach, CA, Mar. 2012.
- *Encoded Sensing for Energy Efficient Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, ACM MobiCom International Workshop on Mission-Oriented Wireless Sensor Networking, Istanbul, Turkey, Aug. 2012.
- *Towards Optimal Broadcast in Wireless Networks*, Milen Nikolov and Zygmunt J. Haas, ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems, Miami Beach, FL, Nov. 2011.
- *Exploiting Mobile Ad Hoc Networking to Provide Connectivity in New York City Subway Stations System*, Milen Nikolov and Vishal Anand, National Conference on Undergraduate Research, La Crosse, WI, Apr. 2009.

---

## GRANTS

---

- Networked Data Centers Power Management*: <http://www.mnikolov.com/dc> Spring 2013 - Fall 2014
- Drafted a research proposal on job-centered power management policies for interconnected data centers.
  - Awarded \$160,000 NSF EAGER Grant. (Principal Investigator: Prof. Zygmunt J. Haas)

---

## AWARDS AND HONORS

---

- *Best Paper Award*, ACM MobiCom, Workshop on Mission-Oriented Wireless Sensor Networking. 2012
- *Chancellor's Award for Student Excellence*, State University of New York (inc. all 64 campuses). 2009
- *Winner, Symbian Ltd. International Essay Contest*, Breakthrough Technology Improvements, £1000. 2008

- *The College at Brockport Distinguished Scholar in Residence Scholarship*, Tuition, Room & Board. 2005 - 2009
- *The College at Brockport Scholar Recognition Award*. 2005 - 2009
- *Honor societies*: Alpha Chi, Pi Mu Epsilon, Sigma Xi.
- *Sigma Xi Award for Computer Science Research*, SUNY: College at Brockport. 2008
- *Computer Science Program Scholar Award*, SUNY: College at Brockport. 2008
- *Honors Liberal Arts Delta Program Scholar Award*, SUNY: College at Brockport. 2008
- *Computer Science Departmental Award*, SUNY: College at Brockport. 2007
- *Mathematics Departmental Award*, SUNY: College at Brockport. 2007
- 2<sup>nd</sup> place, ACM SIGCSE, CCSC Eastern, Team Programming Contest. 2006

## RESEARCH EXPERIENCE

---

**Postdoctoral Researcher**     **Institute for Disease Modeling, Bellevue, WA**     **February 2015 - present**

*Dynamic Spatial Malaria Modeling*: [http://www.imd.umc.edu/malaria](#)     February 2015 - March 2016

- Calibrated EMOD's malaria model to match *P. falciparum* surveillance prevalence and clinical cases across a spatial network of 121 village-nodes, covering 80,000+ people and spanning the Lake Kariba region of Zambia.
- Optimized intervention mixes and schedules towards the 2020 malaria elimination target in Zambia.

**Research Assistant**     **Wireless Networks Laboratory, Cornell University**     **2009 - 2014**

*Wireless Networks Design*: <http://www.mnikolov.com/tc>     2013 - 2014

- Investigated automated positioning of devices in wireless networks for optimal throughput and latency.
- Showed optimal algorithm runtime is  $O(2^n)$  and the problem is APX-hard. Designed 97%-effective heuristic.

*Data Reporting in Sensor Networks*: <http://www.mnikolov.com/es>     2011 - 2012

- Formulated new data encoding algorithms leveraging correlation models of measurements.
- Improved radio energy consumption by a factor of two over the existing schemes.

*Modeling Inequality in Social Interaction Networks*: <http://www.mnikolov.com/sn>     2011

- Collaborated with social scientists to model social interaction inequality as a function of graph degree distributions.
- Mined large-scale data from social networks, e.g. 539,800+ individuals on CouchSurfing.

*Information Broadcast in Mobile Networks*: <http://www.mnikolov.com/bc>     2009 - 2010

- Developed a new distributed algorithm based on graphical models for wireless broadcast.
- Improved broadcast efficiency by at least 20% and reduced device cost by 30% over competitive algorithms.

*On-chip Network Routing*: <http://www.mnikolov.com/nc>     2010

- Teamed with device and communication engineers to build and evaluate new routing algorithms for multicore chips.

## TEACHING EXPERIENCE

---

**Teaching Assistant**     **Cornell University**     **2013**

- Course: Wireless Networks - led weekly problem sessions for students (class of 30+).
- Course: Wireless Networks - supervised course graders.

**Teaching Assistant**     **Cornell University**     **2011**

- Course: Fundamentals of Networks - a graduate level class on network modeling.

## INDEPENDENT TECHNICAL PROJECT

---

**Mirlix: Lyrics Revisited**: <http://www.mirlix.net>     **2013 - 2014**

- Extracted 800,000+ songs from the web into a key-value database, augmented with tf-idf based search engine.
- Implemented ad-free web-interface running on Amazon EC2 instance. (JavaScript, PHP and Java)

## SERVICE

---

- *Reviewer*, IEEE Transactions on Parallel and Distributed Systems. 2012 - 2015
- *Treasurer*, Cornell University Engineering Graduate Student Association. 2011 - 2012
- *Webmaster*, Brockport Student Government (BSG). 2008

## SKILLS & INTERESTS

---

**Technology**: Java, Python, MATLAB, PHP, JavaScript, MySQL, C · AJAX, CSS, HTML · Eclipse, Vim, Xcode.

**Languages**: Bulgarian (Native) · English (Fluent) · German (Basic).

**Sports**: Rock Climbing (5.11 lead) · Running (Half marathons).