

Ryan N. Lichtenwalter

- CONTACT INFORMATION McGill University
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- RESEARCH INTERESTS Network science, link prediction, graph algorithms, machine learning, large data sets, distributed computation, data stream processing, computer music, engineering education
- EDUCATION **The University of Notre Dame**, Notre Dame, Indiana, USA
- Ph.D., Computer Science, May 2012
- Thesis Topic: *Link Prediction*
 - Adviser: Nitesh V. Chawla
 - Area of Study: Network Science
- M.S., Computer Science, May 2009
- Thesis Topic: *Knowledge Acquisition in Dynamic Data*
 - Advisor: Nitesh V. Chawla
 - Area of Study: Data Mining
- B.S., Computer Science, May 2006
- *cum Laude*, With Honors in Engineering
- REFEREED JOURNAL PUBLICATIONS **Lichtenwalter, R.N.** and Chawla, N.V. Vertex collocation profiles: theory, computation and results. In: *Springer Plus*, 2014.
- Ercsey-Ravasz, M., **Lichtenwalter, R.N.**, Chawla, N.V. and Toroczkai, Z. Range-limited centrality measures in complex networks. In: *Physical Review Letters E*, 2012.
- Davis D., **Lichtenwalter R.N.**, and Chawla N.V. Supervised methods for multi-relational link prediction. In: *Social Network Analysis and Mining*, 2012.
- Lichtenwalter, R.N.** and Chawla, N.V. LPmade: Link prediction made easy. In: *Journal of Machine Learning Research*, 2011.
- Lichtenwalter, R.N.** and Chawla, N.V. A machine learning approach to autonomous music composition. In: *Journal of Intelligent Systems*, 2010.
- CONFERENCE PUBLICATIONS **Lichtenwalter, R.N.** and Chawla, N.V. Link prediction: fair and effective evaluation. In: *Proceedings of the International Conference on Advances in Social Networks Analysis and Mining*, 2012.
- Lichtenwalter, R.N.** and Chawla, N.V. Vertex collocation profiles: Subgraph counting for link analysis and prediction. In: *Proceedings of the International Conference on World Wide Web*, 2012.
- Lichtenwalter, R.N.** and Chawla, N.V. DisNet: A framework for distributed graph computation. In: *Proceedings of the International Conference on Advances in Social Networks Analysis and Mining*, 2011.
- Davis, D. and **Lichtenwalter, R.N.** and Chawla, N.V. Multi-relational link prediction in heterogeneous information networks. In: *Proceedings of the International Conference on Advances in Social Networks Analysis and Mining*, 2011.

Lichtenwalter, R.N. and Lussier, J.T. and Chawla, N.V. New perspectives and methods in link prediction. In: *Proceedings of the ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, July 2010.

Lichtenwalter, R.N. and Lichtenwalter, K. and Chawla, N.V. Applying learning algorithms to music generation. In: *Proceedings of the Indian International Conference on Artificial Intelligence*, December 2009.

Lichtenwalter, R.N. and Chawla, N.V. Adaptive methods for classification in arbitrarily imbalanced and drifting data streams. In: *Proceedings of the PAKDD Conference*, April 2009.

Chawla, N.V. and Thain, D. and **Lichtenwalter R.N.** and Cieslak, D.A. Data mining on the grid for the grid. In: *Proceedings of the IEEE International Symposium on Parallel and Distributed Processing*, April 2008.

PROFESSIONAL
EXPERIENCE

McGill University, Montreal, Quebec, Canada

Post-doctoral Researcher

January 2014 to Present

- Created and applied novel high-performance machine learning strategies and software to perform multivariate genetic analysis.
- Developed sophisticated database-driven web tools and utilities to allow collaborators to perform data aggregation and statistical analyses.
- Deployed and administrated secure server and network infrastructure to manage data sets in MB, GB, and TB scales.

University of Notre Dame, South Bend, Indiana USA

Post-doctoral Researcher

May 2012 to August 2012

- Developed mathematical models and algorithms for large, complex network data.
- Worked in collaboration with **Battelle Memorial Institute** and **Pacific Northwest National Laboratory (PNNL)**.

Nathan Regola Computer Consulting, LLC, South Bend, Indiana USA

Software and Web Development

February 2011 to April 2012

- Developed user entry and computation portal for clients at the University of Notre Dame using XHTML, CSS, PHP, MySQL, and Matlab.
- Provided CSS design services for various clients.

Lockheed Martin Corporation, Eagan, Minnesota USA

ELDP - Software Development

September 2007 to July 2007

- As part of Lockheed Martin Engineering Leadership Development Position, a position for high-potential new hires.
- Performed software design, Java and J2EE development, and testing for high-visibility fledgling program.
- Assisted in Oracle data base design to support software development efforts.
- Wrote extensions to large legacy systems incorporating C/C++ and Ada.
- Received Spot Award "In Recognition of Your Commitment to Mission Success and Your Contribution to the Corporation's Goals"

ELDP - Configuration Management

June 2006 to September 2007

- As part of Lockheed Martin Engineering Leadership Development Position, a position for high-potential new hires.
- Used Dimensions software suite to manage mission-critical code base.
- Automated build system using **bash** and **csh** scripts.

TEACHING
EXPERIENCE

The University of Notre Dame, Notre Dame, Indiana USA

Instructor **January 2013 to May 2013**

- Instructor for CSE 66725: Directed Readings in Machine Learning and Computer Vision
 - Spring 2013 (1 section)
 - Responsible for one semester of 3-hour guided reading group meetings for a graduate-level course.
 - Developed syllabus, selected readings, and offered insights and experience.
 - Course web page available upon request.
 - Anonymous student evaluations available upon request.

Instructor **August 2010 to December 2010**

- Instructor for CSE 30331: Data Structures
 - Autumn 2010 (1 section)
 - Responsible for one semester of 75-minute lectures for a required junior-level course.
 - Developed syllabus, assignments, course project, and exams.
 - Non-sensitive portions of course web page available upon request.
 - Anonymous student evaluations available upon request.

Graduate Teaching Assistant **January 2009 to May 2009**

- Assistant for CSE 40768/60768: Network Phenomena
 - Spring 2009 (1 section)
 - Assisted **Network Phenomena** instructor.
 - Provided technical support and web maintenance services.
 - Graded course assignments.
 - Assisted in the preparation of exam materials.

Substitute Lecturer **August 2008 to December 2010**

- Lectured for CSE 20211: Fundamentals of Computing I
 - Autumn 2008 (1 section), Autumn 2009 (1 section), Autumn 2010 (1 section)
 - Designed and presented several 50-minute lectures.

Mentor to Undergraduate **August 2009 to March 2010**

- Student: Jake T. Lussier
 - Served as research advisor to and published refereed paper with student.

AWARDS

The University of Notre Dame

- Center for Research Computing Award for Computational Sciences and Visualization (\$1000), 2012
- Arthur J. Schmitt Presidential Fellowship in Science and Engineering, 2007-2011
- National Science Foundation Fellowship Program Honorable Mention, 2009

Lockheed Martin Corporation

- Lockheed Martin Corporation Spot Award, 2007
- Lockheed Martin Service Award, 2007

The Timken Company

- Timken Company Scholar, 2002-2006

National Merit Scholarship Corporation

- National Merit Scholar

SERVICE

The University of Notre Dame

Organizer

- Notre Dame Bike-to-Work Summer Competition, 2011
- Notre Dame Sustainability Week Bicycle-Powered Viewing of *An Inconvenient Truth*, 2010

Volunteer/Participant

- Pink Zone 24-hour Spin-A-Thon, 2011-2012
- Office of Sustainability Green Ambassador, 2011-2012
- 3rd Annual Bike Michiana for Hospice SAG Stop, 2011
- Relay for Life, 2010

Author or contributor

- WEKA data mining open source software
- LPmade link prediction open source software
- VCP link analysis open source software

Lockheed Martin Corporation

Volunteer/Participant

- Cancer run