

Forrest Stonedahl, Ph.D.

CURRENT POSITION

Assistant Professor of Computer Science

Augustana College
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Rock Island, IL 61201

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PREVIOUS POSITIONS

Centre College (Danville, Kentucky) *2011-2014*

- Assistant Professor of Computer Science & Mathematics
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RESEARCH INTERESTS

- **Artificial Intelligence:** evolutionary computation, multi-agent systems
 - **Complex Systems:** agent-based modeling, emergence, social networks
 - **Computer Science Education:** curriculum development, decentralized thinking
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EDUCATION

Northwestern University, Evanston, Illinois USA

Ph.D., Computer Science *2011*

- *Thesis:* “Genetic Algorithms for the Exploration of Parameter Spaces in ABMs”
- *Committee:* Uri Wilensky (adv), William Rand, Doug Downey, Luis Amaral
- Cognitive Science Specialization Certificate

M.S., Computer Science *2008*

- *Advisor:* Uri Wilensky
- Cumulative GPA: 3.96/4.00

Carleton College, Northfield, Minnesota USA

B.A. Computer Science, Mathematics *2004*

- Cumulative GPA: 3.96/4.00 (4.00 in majors)
 - Summa Cum Laude
 - Foreign Study: Budapest Semester in Mathematics *Fall 2003*
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MANUSCRIPTS IN PREPARATION

- Pierrehumbert, J.B., **Stonedahl, F.**, & Daland, R. (In preparation). Informational cascades under probabilistic signaling. Working manuscript.
- Ottino-Löffler, B., **Stonedahl, F.**, Veetil, V., & Wilensky, U. (In preparation). Spatial competition as a decentralized iterative process. Working manuscript.

EDITED BOOK
CHAPTERS

- **Stonedahl, F.**, & Rand, W. (2014, in press). When Does Simulated Data Match Real Data? Comparing Model Calibration Functions using Genetic Algorithms. In *Advances in Computational Social Science: The Fourth World Congress*, C. Tai, S. Chen, T. Ternaio, & R. Yamamoto (eds). Agent-Based Social Systems, vol. 11. Springer-Verlag. ISBN: 978-4-431-54846-1
 - **Stonedahl, F.**, & Wilensky, U. (2011). Finding Forms of Flocking: Evolutionary Search in ABM Parameter-Spaces. *Multi-Agent-Based Simulation 2010*, T. Bosse, A. Geller, & C. M. Jonker (Eds). Lecture Notes in Artificial Intelligence 6532. pp. 61–75. Springer, Heidelberg.
 - **Stonedahl, F.**, Wilkerson-Jerde, M. & Wilensky, U. (2011). MAgICS: Toward a Multi-Agent Introduction to Computer Science. In M. Beer, M. Fasli, & D. Richards (Eds.), *Multi-Agent Systems for Education and Interactive Entertainment: Design, Use and Experience*. IGI Global.
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PEER REVIEWED
CONFERENCE &
WORKSHOP
PAPERS

- Monical, C. & **Stonedahl, F.** (2014). Static vs. Dynamic Populations in Genetic Algorithms for Coloring a Dynamic Graph. *Proceedings of the 2014 Conference on Genetic and Evolutionary Computation (GECCO '14)*. July 12-16. Vancouver, B.C., Canada.
- **Stonedahl, F.** & Stonedahl, S. H. (2012). Darwinian Rivers: Evolving Stream Topographies to Match Hyporheic Residence Time Distributions. *Proceedings of the 14th International Conference on Genetic and Evolutionary Computation (GECCO '12)*. July 7-11. Philadelphia, PA.
- **Stonedahl, F.** & Rand, W. (2012). “When Does Simulated Data Match Real Data? Comparing Model Calibration Functions using Genetic Algorithms.” *Proc. of the 4th World Congress on Social Simulation (WCSS 2012)*. Sept. 4-7. Taipei, Taiwan.
- Anderson, D., Dellarocas, C., Katona, Z., Rand, W., & **Stonedahl, F.** (2011). “News, Networks and Users: How Network Properties affect Online News Consumption.” Conference on Information Systems and Technology (CIST 2011). November 12-13, Charlotte, NC.
- **Stonedahl, F.**, & Wilensky, U. (2010). Evolutionary Robustness Checking in the Artificial Anasazi Model. In *Proceedings of the AAAI Fall Symposium on Complex Adaptive Systems: Resilience, Robustness, and Evolvability*. November 11-13, 2010. Arlington, VA.
- **Stonedahl, F.**, Rand, W., & Wilensky, U. (2010). Evolving Viral Marketing Strategies. *Proceedings of the 12th Annual Conference on Genetic and Evolutionary Computation (GECCO '10)*. July 7-11. Portland, OR.
- **Stonedahl, F.** & Stonedahl, S. H. (2010). Heuristics for Sampling Repetitions in Noisy Landscapes with Fitness Caching. *Proceedings of the 12th Annual Conference on Genetic and Evolutionary Computation (GECCO '10)*. July 7-11. Portland, OR.
- **Stonedahl, F.** & Wilensky, U. (2010). Finding Forms of Flocking: Evolutionary Search in ABM Parameter-Spaces. *Proceedings of the MABS workshop at the Ninth International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS '10)*. May 11. Toronto, Canada.

- **Stonedahl, F.**, Wilkerson-Jerde, M., & Wilensky, U. (2009) “Re-conceiving Introductory Computer Science Curricula through Agent-Based Modeling.” *Workshop on Educational Uses of Multi-Agent Systems at the Autonomous Agents and Multi-Agents Systems Conference (AAMAS '09)*, May 12. Budapest, Hungary. pp. 63-70.
- **Stonedahl, F.**, Rand, W., & Wilensky, U. (2008). CrossNet: A Framework for Crossover with Network-based Chromosomal Representations. *Proceedings of the Genetic and Evolutionary Computation Conference (GECCO '08)*, pp. 1057–1064, July 12-16, Atlanta, GA, USA.
- **Stonedahl, F.**, Rand, W. & Wilensky, U. (2008). Multi-Agent Learning with a Distributed Genetic Algorithm: Exploring Innovation Diffusion on Networks. *ALAMAS+ALAg Workshop at the Autonomous Agents and Multi-Agents Systems Conference (AAMAS '08)*, May 12-16, Estoril, Portugal.
- Rand, W., & **Stonedahl, F.** (2007). The El Farol Bar Problem and Computational Effort: Why People Fail to Use Bars Efficiently. *Proceedings of the Agent 2007 Conference*, Nov. 15-17, Chicago, IL, USA.
- **Sondahl[†], F.**, Tissue, S. & Wilensky, U. (2006). Breeding Faster Turtles: Progress towards a NetLogo Compiler. *Proceedings of the Agent 2006 Conference*, Sept. 21-23, Chicago, IL, USA.

RESEARCH
PRESENTATIONS

- Stonedahl, S. H., Cooper, D. G., Everingham, J. M., Kraciun, M. K. , & **Stonedahl, F.** (2012) Quantifying the impact on hyporheic flow of assuming homogenous hydraulic conductivity distributions within permeameters. Abstract H13I-06, American Geophysical Union Fall Meeting, December 3, 2012. San Francisco.
- **Stonedahl, F.** (2011) Query-Based Model Exploration: Parameters and Paradigms. Invited seminar speaker at the Center for the Study of Complex Systems at the University of Michigan. November 14, 2011. Ann Arbor, Michigan.
- Stonedahl, S. & **Stonedahl, F.** (2011) Think-Tac-Toe: When are puzzles solvable? In the *Recreational Mathematics: New Problems and New Solutions* contributed papers session at the MAA MathFest 2011. August 5-6, Lexington, KY.
- Rand, W., **Stonedahl, F.**, & Wilensky, U. (2011) Evolving Viral Marketing Strategies. Presented by Rand at the *Advanced Research Techniques Forum*, June 5-8, Desert Springs, CA.
- **Stonedahl, F.** & Mitchell, S. (2011) “Background & Overview of the Artificial Anasazi Model.” (Invited Session Facilitator.) *Epistemology of Modeling and Simulation Conference*. April 1-3. Pittsburgh, PA.
- **Stonedahl, F.** (2011) Invited “Fireside Chat” research presentation at the Ayers College of Commerce and Industry (residential college), Northwestern University, Evanston, IL. Jan. 19, 2011.
- **Stonedahl, F.** (2009) “NetLogo: Meditations on a Tool for Learning and Modeling.” [invited plenary presentation]. *Workshop on Educational Uses of Multi-Agent Systems at the AAMAS '09 conference*, May 12. Budapest, Hungary.
- **Stonedahl, F.**, Kornhauser, D., Russell, E., Brozefsky, C., Verreau, E., Tissue, S. & Wilensky, U. (2008). “Tinkering with Turtles: An Overview of NetLogo’s Extensions API.” *Presentation at the Swarmfest 2008 Conference*, May 11-13. Chicago, IL.

[†]My surname changed from Sondahl to Stonedahl as a result of my marriage in 2007.

- **Sondahl[†], F.** & Rand, W. (2007). “Multi-agent Communication Disorders: Dynamic Breeding Networks in Genetic Algorithms”. *Presentation at the Swarmfest 2007 Conference*, DePaul University, July 12-14. Chicago, IL, USA.

CONFERENCE
POSTERS

- Stonedahl, S.H., **Stonedahl, F.**, Lohberg, M., Lusk, K. and Miller, M. (2013). Photogrammetric Method and Software for Stream Planform Identification. Abstract H43E-1506, American Geophysical Union Fall Meeting, Dec. 12, 2013, San Francisco.
- Lohberg, M.,* Lusk, K., Miller, D., **Stonedahl, F.** and Stonedahl, S. H. (2013). Investigating Methods of Stream Planform Identification. Abstract ED33D-0794, American Geophysical Union Fall Meeting, Dec. 11, 2013, San Francisco.
- Lusk, K.*, Lohberg, M., Miller, D., **Stonedahl, F.**, and Stonedahl, S. H. (2013). Investigating Photogrammetric Methods for Stream Planform Identification. Fifth Annual Illinois-Iowa ACS Undergraduate Research Conference. November 16, 2013. Davenport, IA.
- **Stonedahl, F.**, Rand, W., & Anderson, D. (2011) When Does Simulated Data Match Real Data?: Exploring Model Calibration Functions using Evolutionary Computation. *Poster presented at the 13th Annual Conference on Genetic and Evolutionary Computation (GECCO '11)*. July 12-16. Dublin, Ireland.
- Ottino-Löffler, J.* & **Stonedahl, F.** (2011). “An Agent-Based Model of Polarization in Political Networks.” **Best Student Poster Award**, *Presented at the 2011 Complexity Conference*, March 6-7. Northwestern University, Evanston, IL.
- **Stonedahl, F.** (2011). “Evolutionary Robustness Checking in the Artificial Anasazi Model” *Presented at the 2011 Complexity Conference*, March 6-7. Northwestern University, Evanston, IL.
- **Stonedahl, F.**, Rand, W., & Wilensky, U. (2010). “Discovering Viral Marketing Strategies for Social Networks.” *Poster presented at the Workshop on Information in Networks (WIN 2010)*. Sept. 24-25. New York University, Stern School of Business, New York, NY, USA.
- **Stonedahl, F.** (2009). “Evolutionary exploration of parameter spaces in agent-based models: A case study in flocking behavior.” *Poster presented at the NICO Complexity Conference*, Sept. 1-3. Northwestern University, Evanston, IL, USA.
- Stonedahl, S.H. & **Stonedahl, F.** (2009). “Quantifying Fitness Landscapes Robustness to Noise and Uncertainty.” *Poster presented at the NICO Complexity Conference*, Sept. 1-3. Northwestern University, Evanston, IL, USA.
- **Sondahl[†], F.** & Rand, W. (2007). “Evolution of Non-Uniform Cellular Automata using a Genetic Algorithm: Diversity and Computation”. *Poster presented at the Genetic and Evolutionary Computation Conference (GECCO '07)*, July 7-11, London, UK.

*Presented by undergraduate student research advisee.

TEACHING
EXPERIENCE

Augustana College (assistant professor)

- CSC 399: [I.S.] Ebola Modeling *Winter 2014-15*
- CSC 211: Introduction to Computer Science I *Winter 2014-15*
- CSC 285: Software Development *Fall 2014*
- CSC 121: Explorations in Computing *Fall 2014*

Centre College (assistant professor)

- CSC 332: Design and Analysis of Algorithms *Spring 2012, 2014*
- CSC 117: Introduction to Computer Science *Fall 2013, Spring 2013, 2014*
- CSC 271: Introduction to Computational Art *Jan. 2012, Jan. 2014*
- CSC 401: [I.S.] Android Application Development *Fall 2013*
- CSC 401: [I.S.] Integrative Robotics and Drama *Fall 2013*
- CSC 390: Programming Challenges *Fall 2013*
- MAT 110: Math in Our Society *Fall 2013, Fall 2011*
- CSC 401: [I.S.] Genetic Coloring of Dynamic Graphs *2012-2013*
- CSC 339: Topics in Artificial Intelligence *Spring 2013*
- MAT 190: Discrete Mathematics *Spring 2013, Spring 2012*
- CSC 402: [I.S.] Political Debate Text Analysis *Fall 2012*
- CSC 400: [I.S.] Functional Programming in Scala *Fall 2012*
- CSC 341: Principles of Programming Languages *Fall 2012*
- MAT 140: Differential Calculus with Review *Fall 2012*
- CSC 401: [I.S.] Computational/Neural Modeling *Fall 2011*
- CSC 334: Theoretical Foundations of Computer Science *Fall 2011*

Northwestern University (teaching assistant)

- EECS 372/472: Designing and Constructing Models
with a Multi-Agent Language *Spring 2009, 2011*
- EECS 111: Fundamentals of Computer Programming *Fall 2007, 2010*
- EECS 349: Machine Learning *Fall 2009*
- EECS 395-20: Intermediate Computer Graphics *Winter 2008*
- EECS 395-24: Comp. Graphics & Movie Merge Algorithms *Winter 2008*

Instructional Tutorials

- **Stonedahl, F.**, Weintrop, D., Blikstein, P. & Shannon, C. “NetLogo: Teaching with Turtles and Crossing Curricular Boundaries”. Workshop at 44th ACM Technical Symposium on Computer Science Education (SIGCSE). Denver, CO. *March 2013*
- **Stonedahl, F.** & Stonedahl, S.H. “Introduction to Multi-Agent Computer Simulation using NetLogo”. Summer Research Institute Workshop at St. Ambrose University. Davenport, IA. *July 2012*
- Rand, W., **Stonedahl, F.**, & Kornhauser, D. (2009). “Complex Adaptive Systems Tutorial: Agent-Based Modeling.” Assistant instructor. *AAAI Fall Symposium*. Arlington, VA, USA. *Nov. 2009*
- **Stonedahl, F.**, & Wilkerson-Jerde, M. “Constructing, Analyzing and Critiquing Agent-Based Models”. Co-leader. Tutorial at the *NICO Complexity Conference*, Northwestern University, Evanston, IL, USA. *Sept. 2009*
- Unterman, J., & **Stonedahl, F.** “Intro. to Agent-Based Modeling using NetLogo.” Co-leader. Tutorial at *Swarmfest 2007 conference*, Chicago, IL, USA. *July 2007*
- “Introduction to Agent-Based Modeling using NetLogo.” Assistant Instructor. Workshop at the *Agent 2006 conference*. Chicago, IL, USA. *Sept. 2006*
- “NetLogo Workshop for Texas Instruments’ Educators”. Assistant Instructor. Northwestern University, Evanston, IL, USA. *July 2006*

Teaching Young Students / Outreach

- STEM outreach booth volunteer at IA state fair *2013*
- Judge for First Lego League Qualifier, Quad Cities *Dec. 2012*
- McCormick annual *Career Day for Girls* outreach program for 6-12th grade girls. Co-led research demos/hands-on activities. *2009-2011*
- Northwestern University annual *Take Our Daughters to Work Day*. Led and/or assisted with computer programming tutorial. *2007-2009*
- *Constructing For Learning* club: robotics & technology demos at the RefugeeOne youth outreach program. *2010*
- North Shore Home Educators MATHCOUNTS program for middle school students. Instructor & coach. *2008-2011*
→ *5th Place Team* at the 2011 Illinois State Competition
- North Shore Home Educators Math Olympiad program for elementary & middle school students. Instructor. *2006-2008*

GRANTS, HONORS & AWARDS

Centre College

- Associated Colleges of the South (ACS) Faculty Advancement Grant, Co-PI “An ACS-wide Conversation about MOOCs and the Liberal Arts”, \$10,000 *2013*
- Proposal for special institutional funds to purchase 3-D printer. \$4,430 *2012*
- Centre College Summer Research Grant, (Faculty Development Committee) “*Text mining for political debate analysis*”, \$4000 *2012*

Northwestern University

- Quest HPCC allocation (co-wrote with advisor), 250K CPU-hours 2010-2011
- Murphy Society grant (co-wrote with advisor), \$69,000 2009-2011
- Student travel grants/awards (from NU, AAAI, ACM), \approx \$4,000
- First place prize, *Art of Evolution* exhibition February 2009
- First place prize, NetLogo Annual Pi Day Contest March 2008
- William Cabell Fellowship 2005-2006

Carleton College

- Distinction in Math & Computer Science senior projects 2004
- Phi Beta Kappa & Sigma Xi 2003-2004
- National Merit Scholarship Recipient 2000-2004
- Noyes Prize recipient Sept. 2003
- Exemplary Writing Portfolio award June 2001
- Annual Dean's List 2000-2004

RESEARCH ADVISING

- Undergraduate student research/project advisees:
 - Michael duPont, Zach Trette *robotic theater/drama*
 - Jeff Elam, Brooks Johnson, Cyrus Xi *location-aware messaging mobile app.*
 - Michelle Lohberg, Kyle Lusk, David Miller
(USRI @ St. Ambrose Univ.) *photogrammetric stream planform identification*
 - Cara Monical (J.C.Y. scholar) *genetic algorithms for dynamic graph coloring*
 - Matthew Gidcomb *NLP/text analysis of political speech*
 - Sergey Krilov & Rumou Duan *3-D agent-based model visualization*
 - Jules Ottino-Löffler *political economics simulation*
 - Abbie Jacobs *social networks & complex systems*
 - Daniel Kim & Wenhao Sun *agent-based hydrogen desorption model*
 - Bertrand Ottino-Löffler *modeling competition in economic markets*
 - Greg McGlynn (Murphy scholar) *parapatric speciation model*

PROFESSIONAL EXPERIENCE & SERVICE

- Service at Centre College
 - Treasurer, Phi Beta Kappa, Beta Chapter of Kentucky 2013-2014
 - Chair, Instructional and Technology Resources Committee 2013-2014
 - Steering Committee member 2013-2014
 - Mellon Grant working group on UG research in the curriculum 2013-2014
 - Chair, Computational Science Minor Investigation Committee 2012-2014
 - Undergraduate Research Committee member 2012-2014
 - Institutional Review Board member 2012-2014
 - Mathematical Association of America liaison 2011-2013
 - College Council member 2012-2013
- External Service & Activities
 - Attended the ACS Focus Forum on Adult Education & Blended Learning 2013
 - Editorial Review Board member, SAGE Open 2013
 - Article editor for SAGE Open 2013
 - Reviewer for the journal *Environment and Planning B* 2013
 - Program committee, GECCO conference 2012-2013
 - ECoMASS Workshop Chair (at GECCO Conference) 2011-2013

- Paper reviewer, ACM SIGCSE Conference 2012-2013
- Program committee, Int'l Conf. on Interaction Design and Children 2011-2013
- Ad-hoc reviewer, PLoS-ONE 2011
- Program committee, AAAI Fall Symposium on Complex Adaptive Systems 2011
- Reviewer for ASME Int'l Design Engineering Technical Conferences (IDETC) & Computers and Information in Engineering Conference (CIE) 2009
- Affiliate Researcher, Smith School of Business, Univ. of Maryland 2009-2013
- Association for Computing Machinery (ACM) Member 2008-present
 - ACM undergraduate chapter treasurer 2002-2003
- Association for the Advancement of A.I. (AAAI) member 2009-2011
- Swarm Development Group member 2010-2011
- NICO reading group member, leader (2010-2011) 2006-2011

TECHNICAL
SKILLS

Languages: Java, Python, NetLogo, Meta/Scheme/Lisp, C/C++, bash/shell, Matlab, Scala, Javascript/JQuery, HTML, CSS

Tools: Eclipse, SciPy, L^AT_EX, gnuplot, CVS, SVN, POV-Ray, ZCorp 3-D printing, OpenPBS/Torque (HPCC job scheduling), and a few other abstruse acronyms.

RANDOM
TRIVIA

- Stonedahl, F. (2012). [Cover Artwork](#). Mechanical Engineering Magazine. Published by the American Society of Mechanical Engineers. Vol. 134, No. 3. March 2012.
- In my free time (which seems all too rare lately), I enjoy birding, crocheting, photography, baking banana bread, playing the piano, downhill skiing, and creating math puzzles and logic riddles.
- In 2005, I starred in an instructional DVD about learning to hand-throw pottery.
- In 2004, I was captain of the IM “broomball” team that won the team spirit award.
- In 2004, I wrote a play entitled “Granny Wolfe” (a modern-day version of *Little Red Riding Hood*), which was publicly performed.
- From 2002 to 2004, I served as President of the Carleton College Croquet Society.
- In 2003, I scored 38 points on the [William Lowell Putnam exam](#), ranking 137.5 out of 3615 undergraduate mathematicians competing.
- As a youth, I had a pet rabbit that lived on the roof.