Derrick Stolee Curriculum Vitae

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Research Interests

Many important problems in modern mathematics involve the understanding of graphs. Their structure encodes information useful for countless applications and presents interesting questions of pure theoretic interest. Much of complexity theory relies upon different classes of graphs to define the most important problems. Many tools and techniques have been developed to analyze graphs: their invariants, automorphisms, and their existence under certain conditions. My goal is to combine modern proof techniques with computational methods to solve these unanswered questions, including the existence of certain strongly-regular graphs, space-bounded algorithms for reachability, and variants of the Reconstruction Conjecture.

Education

Ph.D. Mathematics & Computer Science, University of Nebraska–Lincoln (Enrolled)

M.S. Mathematics, University of Nebraska–Lincoln, December 2008

B.S. Mathematics & Computer Science, University of Nebraska–Lincoln, May 2007,
with Honors and Jeffrey S. Raikes School of Computer Science and Management

Papers

Stephen G. Hartke, Hannah Kolb, Jared Nishikawa, **Derrick Stolee**, "Automorphism groups of a graph and a vertex-deleted subgraph," *under submission* available as arXiv:0909.3252v1, September 2009.

Derrick Stolee, Chris Bourke, and N.V. Vinodchandran, "A log-space algorithm for reachability in planar DAGs with few sources," ECCC Report TR09-049, June, 2009.

Presentations

Stephen G. Hartke, Hannah Kolb, Jared Nishikawa, **Derrick Stolee**, "Deletion relations of graphs," *Discrete Mathematics, III*, AMS-MAA Joint Meetings, January 14, 2010.

Derrick Stolee "A Multi-dimensional Spatial Cache for Decision Support Systems," Graduate Student Combinatorics Conference, April 12, 2008.

Honors and Awards

Outstanding Qualification Exam, Mathematics Department, 2008.
Othmer Fellowship, University of Nebraska–Lincoln, 2007
ACM International Collegiate Programming Contest, 26th Place, ACM, 2007
UCARE, 2 Year Award, University of Nebraska–Lincoln, 2005–2006
ACM International Collegiate Programming Contest, Honorable Mention, ACM, 2006
Jeffery S. Raikes School of Computer Science and Management, 2003–2007
University of Nebraska-Lincoln Honors Program, 2003–2007

Research/Project Experience

Graduate Mentor for REU — Summer 2009
Stephen Hartke — University of Nebraska–Lincoln
Investigated several variants of the Reconstruction Conjecture with two undergraduates.

Graduate Research Assistant — Summer 2008
N. V. Vinodchandran — University of Nebraska–Lincoln
Developed an algorithm for reachability on some planar graphs in deterministic log-space.

Undergraduate Researcher — 2004–2006
Steve Goddard — University of Nebraska–Lincoln
Developed software components for the National Agriculture Decision Support System (NADSS), including a cache to store and retrieve spatial data.

Teaching Experience

Project Support — Spring 2009
CSCE 361: Software Engineering — with Sebastian Elbaum

Laboratory Lecturer — Spring 2009
CSCE 150A: Problem Solving with Computers — with Chris Bourke

Recitation Lecturer — Fall 2007–Fall 2008
MATH 107: Calculus II — with Steve Cohn, Mikil Foss, Irakli Loladze, Mohammed Rammaha, and Roger Wiegand

Recitation Lecturer — Spring 2007
CSCE 235: Introduction to Discrete Structures — with Brian Kell

Undergraduate Teaching Assistant — Fall 2006–Spring 2007
RAIK 183H/184H: Foundations of Computer Science I & II — with Myra Cohen, Steve Reichenbach, and Leen-Kiat Soh

Employment

Agile Sports — Lincoln, NE
Independent Contractor — 2007
Designed and implemented an experimental gesture-recognition application for the design of football plays and grading of player understanding.
Supervisor: Brian Kaiser.

Orange Peel, Inc. — Lincoln, NE
Software Developer — 2004–2005
Developed insurance applications for client management and forms processing.
Supervisor: Ian Cottingham.

References

Dr. Stephen Hartke, Mathematics Co-advisor, `sharte2@unl.edu`

Dr. N.V. Vinodchandran, Computer Science Co-advisor, `vinod@cse.unl.edu`

Dr. Judy Walker, `jwalker7@math.unl.edu`

Booklist

Here is a list of my favorite books that are essential to my work.

Topic	Title	Authors	Year
Graph Theory	A first look at graph theory	Clark & Holton	2006
	Algorithmic Graph Theory and Perfect Graphs	Golumbic	2006
	Introduction to Graph Theory*	West	2007
	Extremal Graph Theory (Unpublished)*	West	2008
Combinatorics	Introductory Combinatorics	Brualdi	2005
	Combinatorics: Topics, Techniques, Algorithms*	Cameron	2007
	Extremal Combinatorics with Applications in Computer Science*	Jukna	2009
LP/ILP	Introduction to Linear Optimization	Bertsimas & Tsitsiklis	2008
	Combinatorial Optimization	Papadimitriou & Steiglitz	2008
CS Theory	Algorithmics for Hard Problems	Hromkovič	2006
	Introduction to the Theory of Computation	Sipser	2008
	Algorithmic Game Theory	Nisan, Roughgarden, Tardos, & Vazirani	2008
	Concentration of Measure for the Analysis of Randomized Algorithms	Dubhashi & Panconesi	2009