

Brent S. Castle

Curriculum Vitæ

General Information

Indiana University – Bloomington
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Indianapolis, IN 46220

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<http://cs.indiana.edu/~bscastle>
US Citizen

Clearance

Cleared TS/SCI 5/2011-8/2011
Passed National Security Agency Special Background Investigation and Polygraph 2/2011

Research Interests

My research interests include machine learning, computational statistics, and graph theory, and in particular, problems intersecting all three areas. As a research assistant, I have worked on methods for data fusion, manifold learning, and embedding methods for sparse graphs. My current research includes the development and convergence analysis of quasi-Newton methods for stochastic optimization.

Education

Ph.D. Computer Science, Indiana University – Bloomington (Expected) 2012

Advisor: Michael W. Trosset, GPA: 3.857/4.0

Coursework: Scientific Computing, Algorithms Design and Analysis, Advanced Database Concepts, Knowledge Based Computation, Computational Complexity, Programming Language Principles, Introduction to Bioinformatics, Machine Learning in Bioinformatics

M.S. Applied Statistics, Indiana University – Bloomington (Expected) 2012

Coursework: Applied Linear Models I and II, Statistical Consulting, Model Selection, Graphical Models, Statistical Learning and High-Dimensional Data Analysis, Statistical Computing, Bayesian Theory and Data Analysis, Real Variables, Stochastic Optimization (Readings in Statistics)

B.S. Computer Engineering, Rose-Hulman Institute of Technology 2004

GPA: 3.37/4.0

Experience

Indiana University, Bloomington, IN

Research Assistant, Department of Statistics 2010 – present

Parallel Deterministic and Stochastic Global Optimization Algorithms (funded by the Air Force Office of Scientific Research)

Research Assistant, Department of Statistics 2007 – 2010

Embedding Method for Disparate Data (funded by the Office of Naval Research)

Mentor, Informatics Research Scholars Program, School of Informatics 2009, 2010

Mentored undergraduates studying embedding (2009) and recommendation systems (2010).

Associate Instructor, Department of Statistics 2010

S100: Statistical Literacy

National Security Agency

Computer Science Intern Program (CSIP) 2011

Developed tools for large-scale graph analysis.

Roche Diagnostics, Indianapolis, IN

Software Engineer

2006 – 2007

Firmware development on an electrochemical glucose meter.

Theron Inc., Indianapolis, IN

Software Engineer

2004 – 2006

Non-invasive optical blood pressure meter. (Optical Vitals)

High speed measurement and analysis of a breast biopsy needle. (Suros Surgical Systems)

Robotic pipetting system used for PCR. (Roche Diagnostics)

SBC, Indianapolis, IN

Summer Intern

2002, 2003

Developed database and visualization tools to aid management decision making.

Rose-Hulman Institute of Technology, Indianapolis, IN

Resident Tutor

2002 – 2003

Resident tutor in a sophomore engineering dorm.

Teaching

Primary Instructor

Statistical Literacy (STAT S100, IU), 61 students

2010

Guest Lecturer

Statistical Computing (STAT S721, IU), 1 lecture

2011

Statistical Learning and High-Dimensional Data Analysis (STAT S675, IU), 9 lectures

2008, 2009, 2010

Topics in Database and Information Systems (CSCI B669, IU), 1 lecture

2009

Introduction to Statistics (STAT S320, IU), 1 lecture

2009

Papers

1. B. Castle, M. Tang, and M. W. Trosset. Feature Extraction for Multiple Kernel Learning. Technical Report 09-04, Department of Statistics, Indiana University, 2009.
2. B. Castle and M. W. Trosset. Fast Euclidean Embedding of Ordinal Nearest Neighbor Graphs. In 2010 JSM Proceedings, Section on Statistical Learning and Data Mining.
3. B. S. Castle, M. W. Trosset, and Carey Priebe. A Nonmetric Embedding Approach to Testing for Matched Pairs. Technical Report 11-04, Department of Statistics, Indiana University. (Accepted for presentation at JSM 2011, but illness prevented me from presenting it.)
4. B. S. Castle and M. W. Trosset. Learning from Heterogeneous Data Sources by Combining Dissimilarities. In preparation.
5. M. W. Trosset and B. S. Castle. A Quasi-Newton Method for Stochastic Optimization with Application to Simulation-Based Parameter Estimation. In preparation.
6. D. R. Easterling, L. T. Watson, M. L. Madigan, B. S. Castle, and M. W. Trosset. Parallel Deterministic and Stochastic Optimization of Functions with Very Many Minima. In revision.

Scholarly Presentations and Posters

1. B. S. Castle (with M. W. Trosset). Combining Disparate Information by Nonmetric Multidimensional Scaling (Talk). Interface 2008, Durham, NC.
2. B. S. Castle (with M. W. Trosset). Learning from Heterogeneous Data Sources by Combining Dissimilarities (Poster). 2010 Conference on Nonparametric Statistics and Statistical Learning, Columbus, OH.
3. B. S. Castle (with M. W. Trosset). Learning from Heterogeneous Data Sources by Combining Dissimilarities (Talk). Interface 2010, Seattle, WA.
4. B. S. Castle (with M. W. Trosset). Fast Euclidean Embedding of Ordinal Nearest Neighbor Graphs (Poster). 2010 Joint Statistical Meetings, Vancouver, BC, Canada.
5. B. S. Castle (with M. W. Trosset). Quasi-Newton Methods for Stochastic Optimization With Application to Simulation-Based Parameter Estimation (Talk). 2011 MOPTA, Bethlehem, PA.
6. B. S. Castle (with M. W. Trosset). Quasi-Newton Methods for Stochastic Optimization With Application to Simulation-Based Parameter Estimation (Talk). CHECHS Seminar (Invited), 2011, Blacksburg, VA.

Honors and Awards

Best Presentation, IU School of Informatics and Computing Graduate Research Poster Session	2011
Best Presentation, IU Computer Science Graduate Student Association Research Poster Session	2008
Governor Bob Orr Indiana Entrepreneurial Fellowship	2004-2006
Rose-Hulman Institute of Technology Dean's List	2000-2004

Professional Activities

Reviewer, Journal of Computational and Graphical Statistics
Member, American Statistical Association
Member, Society for Industrial & Applied Mathematics
Member, Association for Computing Machinery

Programming Languages

C, C++, Java, \LaTeX , Matlab, Perl, Python, R