Brian W. Goldman

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RESEARCH INTERESTS

Optimization, Machine Learning, Artificial Intelligence, Evolutionary Computation

EDUCATION

Michigan State University, East Lansing, Michigan

Postdoctoral Research Assistant in Computer Science & Engineering   **July 2015 – present**

Doctor of Philosophy in Computer Science & Engineering   **August 2012 – July 2015**
- Thesis Advisor: Dr. William F. Punch
- GPA: 4.0/4.0

Missouri S&T, Rolla, Missouri

Master of Science in Computer Science   **August 2010 – May 2012**
- Thesis Advisor: Dr. Daniel R. Tauritz
- GPA: 4.0/4.0
- Summa Cum Laude

Bachelor of Science in Computer Science   **August 2006 – July 2010**
- Minor in Mathematics
- GPA: 3.84/4.0 in major, 3.81/4.0 overall
- Summa Cum Laude

PEER REVIEWED JOURNAL ARTICLES

1. B. W. Goldman and W. F. Punch, "Fast and Efficient Black Box Optimization using the Parameter-less Population Pyramid," **Invited Paper**, *Evolutionary Computation Journal* (Impact Factor 3.733), In Press

2. B. W. Goldman and W. F. Punch, "Analysis of Cartesian Genetic Programming's Evolutionary Mechanisms," *IEEE Transactions on Evolutionary Computation* (Impact Factor 5.545), In Press

3. K. D. S. Lehmann, B. W. Goldman, I. Dworkin, D. M. Bryson, A. P. Wagner, "From Cues to Signals: Evolution of Interspecific Communication via Aposematism and Mimicry in a Predator-Prey System," *PloS one* (Impact Factor 3.534), vol. 9, no. 3, e91783, 2014.

4. D. R. White, J. McDermott, M. Castelli, L. Manzoni, B. W. Goldman, G. Kronberger, W. Jaskowski, U.-M. O'Reilly, and S. Luke, "Better GP Benchmarks: Community Survey Results and Proposals," *Genetic Programming and Evolvable Machines*, vol. 14, no. 1, pp. 3–29, 2013.

PEER REVIEWED CONFERENCE PAPERS

1. B. W. Goldman and W. F. Punch, "Parameter-less Population Pyramid," *GECCO* (Acceptance Rate 33%), pp. 785–792, 2014 **Best paper award winner**

2. B. W. Goldman and W. F. Punch, "Length Bias and Search Limitations in Cartesian Genetic Programming," *GECCO* (Acceptance Rate 36%), pp. 933–940, 2013

3. N. R. Kamrath, B. W. Goldman, and D. R. Tauritz, "Using Supportive Coevolution to Evolve Self-Configuring Crossover," *GECCO* (Acceptance Rate 36%), pp. 1489–1496, 2013.

4. B. W. Goldman and W. F. Punch, "Reducing Wasted Evaluations in Cartesian Genetic Programming," *EuroGP* (Acceptance Rate 38%), pp. 61–72, 2013

5. B. W. Goldman and D. R. Tauritz, "Linkage tree genetic algorithms: variants and analysis," *GECCO* (Acceptance Rate 37%), pp. 625–632, 2012

6. B. W. Goldman and D. R. Tauritz, "Supportive Coevolution," *GECCO* (Acceptance Rate 37%), pp. 59–66, 2012.

7. B. W. Goldman and D. R. Tauritz, "Self-Configuring Crossover," *GECCO* (Acceptance Rate 38%), pp. 575–582, 2011.

PEER REVIEWED
POSTER PAPERS

1. B. W. Goldman and D. R. Tauritz, "Meta-Evolved Empirical Evidence of the Effectiveness of Dynamic Parameters", *GECCO*, pp. 155–156, 2011.

TEACHING
EXPERIENCE

Michigan State University, East Lansing, Michigan

CSE232: Introduction to Programming II   **May 2014 – July 2014**

Lead instructor for course. In charge of lecturing, creating course content, and assessments for 37 students. Managed two graduate assistants who taught lab sections and graded assignments. Received 3.81/4 student evaluation. Topics include the C++ programming language from basics up to dynamic memory, templating, and user created data structures.

CSE232: Introduction to Programming II   **August 2013 – May 2014**

Primary instructor for lab section, topics include the C++ programming language from basics up to dynamic memory, templating, and user created data structures.

Missouri S&T, Rolla, Missouri

CS328: Object Oriented Numerical Methods   **January 2012 – May 2012**

Grader for intensive C++ course, topics include advanced programming techniques and how to efficiently solve large systems of equations.

CS54: Introduction to C++ Lab   **January 2011 – December 2011**

Primary instructor for introductory computer science course, topics include programming basics up to inheritance, style, editors, and how to interact with Unix.

CS387: Parallel Computing   **January 2011 – May 2011**

Teaching assistant for parallel computation course, topics include MPI, cluster computing, GPUs, Monte Carlo experiments, and high performance computing.

CS348: Evolutionary Computation   **August 2010 – December 2010**

Teaching assistant for evolutionary computation course, topics include genetic algorithms, evolutionary strategies, genetic programming, and learning classifier systems.

RECENT
PROFESSIONAL
EXPERIENCE

Los Alamos National Laboratories, Los Alamos, New Mexico

Advanced Computing Solutions Program   **May 2012 – August 2012**

Investigated intrusion detection techniques using automated network behavior analysis.

Sandia National Laboratories, Albuquerque, New Mexico

Center for Cyber Defenders Graduate Student Intern   **May 2011 – August 2011**

Developed covert command and control communication methods, created security audit tools for a surveillance camera system, and designed an educational game to teach secure system design.

Dynetics, Huntsville, Alabama

Computer Analyst 3   **May 2010 – August 2010**

Worked with department of defense applications to improve unmanned aerial vehicle data analysis.

HONORS AND
ACTIVITIES

Best Paper - Genentic Algorithms Track for GECCO 2014 "Parameter-less Population Pyramid"
Co-chair, GECCO 2015 Combinatorial Black Box Optimization Competition
Peer Reviewer, IEEE Transactions on Evolutionary Computation Journal 2014–present
Peer Reviewer, Genetic Programming and Evolvable Machines 2014–present
Founder and organizer, Computational Evolution Discussion Group October 2013–present
Program Committee Member, GECCO 2012–present Genetic Algorithms Track

Voted 2012 Leader of the Year, Missouri S&T Computer Science Department

Chair of ACM SIG for AI competition game development (SIG-Game), 2011–2012

Google AI challenge, ranked 25th out of 4619 world wide, 6th in USA, 2010

Missouri S&T Human versus Computer chess tournament, two first place AIs, 2009 and 2011