Brian W. Goldman

Curriculum Vitae

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Education

- 2015 Doctor of Philosophy in Computer Science & Engineering, Michigan State University
  - Dissertation Advisor: Dr. William F. Punch
  - Dissertation: Out of the Box Optimization using the Parameter-less Population Pyramid
- 2012 Master of Science in Computer Science, Missouri University of Science & Technology
  - Thesis Advisor: Dr. Daniel R. Tauritz
  - Thesis: Robust Evolutionary Algorithms
- 2010 Bachelor of Science in Computer Science, Missouri University of Science & Technology

Academic Positions

- Research Assistant Professor, Colorado State University. Starting Spring 2016.
- Postdoc, Hintze Lab, Michigan State University. Fall 2015.
- Advanced Computing Solutions Program, Los Alamos National Laboratories. Summer 2012.
- Center for Cyber Defenders, Sandia National Laboratories. Summer 2011.

Publications (16 Total)

Journal Articles

1. Goldman, B. W. and W. F. Punch (2015). Analysis of Cartesian Genetic Programming's Evolutionary Mechanisms. *IEEE Trans. Evolutionary Computation* **19**(3), 359–373.
2. Goldman, B. W. and W. F. Punch (2015). Fast and Efficient Black Box Optimization using the Parameter-less Population Pyramid. *Evolutionary computation* **23**(3), 451–479.
3. Lehmann, K., B. W. Goldman, I. Dworkin, D. M. Bryson, and A. P. Wagner (2013). From cues to signals: evolution of interspecific communication via aposematism and mimicry in a predator-prey system. *PloS one* **9**, e91783.
4. White, D. R., J. McDermott, M. Castelli, L. Manzoni, B. W. Goldman, G. Kronberger, W. Jaskowski, U.-M. O'Reilly, and S. Luke (2013). Better GP benchmarks: community survey results and proposals. *Genetic Programming and Evolvable Machines* **14**(1), 3–29.

Refereed Conference Papers

1. Goldman, B. W. and W. F. Punch (2015). Gray-Box Optimization using the Parameter-less Population Pyramid. In: *Genetic and Evolutionary Computation Conference*. ACM, pp.855–862.
2. Goldman, B. W. and W. F. Punch (2014). Parameter-less population pyramid. In: *Genetic and Evolutionary Computation Conference*. Vancouver, BC, Canada: ACM, pp.785–792.
3. Goldman, B. W. and W. F. Punch (2013). Length Bias and Search Limitations in Cartesian Genetic Programming. In: *Genetic and Evolutionary Computation Conference*. Amsterdam, The Netherlands: ACM, pp.933–940.
4. Goldman, B. W. and W. F. Punch (2013). Reducing Wasted Evaluations in Cartesian Genetic Programming. In: *European Conference on Genetic Programming*. Vol. 7831. LNCS. Vienna, Austria: Springer Verlag, pp.61–72.
5. Kamrath, N. R., B. W. Goldman, and D. R. Tauritz (2013). Using supportive coevolution to evolve self-configuring crossover. In: *Genetic and Evolutionary Computation Conference Companion*. Amsterdam, The Netherlands: ACM, pp.1489–1496.
6. Goldman, B. W. and D. R. Tauritz (2012). Linkage tree genetic algorithms: variants and analysis. In: *Genetic and Evolutionary Computation Conference*. Philadelphia, Pennsylvania, USA: ACM, pp.625–632.

7. Goldman, B. W. and D. R. Tauritz (2012). Supportive coevolution. In: *Genetic and Evolutionary Computation Conference Companion*. Philadelphia, Pennsylvania, USA: ACM, pp.59–66.
8. Goldman, B. W. and D. R. Tauritz (2011). Self-configuring crossover. In: *Genetic and Evolutionary Computation Conference Companion*. Dublin, Ireland: ACM, pp.575–582.

Conference Posters

1. Goldman, B. W. and D. R. Tauritz (2011). Meta-evolved empirical evidence of the effectiveness of dynamic parameters. In: *Genetic and Evolutionary Computation Conference Companion*. Dublin, Ireland: ACM, pp.155–156.

In Progress

1. Goldman, B. W. and D. Sudholt. Runtime Analysis for the Parameterless Population Pyramid. In: *Genetic and Evolutionary Computation Conference*. ACM.
2. Whitley, L. D., F. Chicano, and B. W. Goldman. Gray Box Optimization for Mk Landscapes (NK Landscapes and MAX-3SAT): Where the interesting problems are (and are not). *Evolutionary computation*.
3. Goldman, B. W. and W. F. Punch (2016). Hyperplane Elimination for Quickly Enumerating Local Optima. In: *European Conference on Evolutionary Computation in Combinatorial Optimisation*. Springer.

Grants

- BEACON NSF STC 2015 funded proposal $105,148
- BEACON NSF STC 2013 funded proposal $62,284.

Awards

- Runner-up, Best Paper - Genetic Algorithms Track for GECCO 2015 “Gray Box Optimization using the Parameter-less Population Pyramid”
- Best Paper - Genetic Algorithms Track for GECCO 2014 “Parameter-less Population Pyramid”
- Voted 2012 Leader of the Year, Missouri S&T Computer Science Department
- Google AI challenge, ranked 25^{th} out of 4619 world wide, 6^{th} in USA, 2010
- Missouri S&T Human versus Computer chess tournament, two first place AIs, 2009 and 2011

Invited talks

- Job Talk, University of Memphis, April 2015
- BEACON NSF STC Congress, Michigan State University, August 2014 and August 2015
- Evolutionary Computation, Michigan State University, September 2014 and October 2015
- Heuristic and Evolutionary Algorithms Laboratory, University of Applied Sciences Upper Austria, December 2014
- BEACON Day, North Carolina A&T, October 2013

Activities

- Co-chair, 2016 Genetic Programing Theory and Practice Conference
- Co-chair, GECCO 2015–present Combinatorial Black Box Optimization Competition
- Peer Reviewer, IEEE Transactions on Evolutionary Computation Journal 2014–present
- Peer Reviewer, Genetic Programming and Evolvable Machines 2014–present
- Program Committee Member, GECCO 2012–present Genetic Algorithms Track
- Founder and organizer, Computational Evolution Discussion Group October 2013–2015
- Chair of ACM SIG for AI competition game development (SIG-Game), 2011–2012

Teaching Experience

- Introduction to Programming II, Summer 2014. Lead instructor for C++11 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.
- Introduction to Programming II, Fall 2013 – Spring 2014. Primary instructor for lab section.
- Object Oriented Numerical Methods, Spring 2012. Teaching assistant for upper level intensive C++ course.
- Introduction to C++ Lab, Spring 2011 – Fall 2011. Primary instructor for lab section.
- Parallel Computing, Spring 2011. Teaching assistant for upper level course.
- Evolutionary Computation, Fall 2010. Teaching assistant for upper level course.