R. Sean Bowman

http://seanbowman.me

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501-765-7654

Summary

- Mathematician, software developer, and teacher seeking to apply skills in new career path
- 15+ years of development experience in C/C++, Python, and Java on Linux
- Spoken to audiences ranging from 5-year-olds to world experts on technical subjects
- Published over 10 papers including several in Machine Learning and related subjects
- Taught over 1000 undergraduates in classes ranging in size from 20 to 120 students
- Technically minded, people focused, driven by working with others to solve tough problems

Education

Ph.D., Mathematics, May 2012
University of Texas, Austin

B.A., Mathematics, May 2000
Washington University in St. Louis

Professional Experience

Visiting Assistant Professor of Mathematics Aug. 2012–Present
Oklahoma State University Stillwater, OK

- Develop novel methods for clustering in graphs based on ideas from 3–dimensional topology
- Use these to implement semi-supervised method for determining yeast protein function, improving on existing results; software in Python interfacing with existing C++ code
- Research in low-dimensional topology, machine learning, and topological data analysis

Graduate Student Aug. 2005–May 2012
University of Texas, Austin Austin, TX

- Researched topics in low-dimensional topology and topological data analysis
- Developed persistent homology for point cloud data using new "collapsing" operation; C++
- Investigated novel persistent homology algorithms more robust to outliers; Python and C++

Software Developer May 2004–Aug. 2004
Rocket Software Bentonville, AR

- Developed logic to determine whether instance has booted for Rocket Provisioning Expert for Linux on zSeries, a server consolidation and configuration tool for IBM mainframes
- Wrote software in C++, C, and Python on Linux for zSeries, limited experience with VM/CMS

Graduate Research Assistant Aug. 2002–Aug. 2005
University of Arkansas Fayetteville, AR

- Created maps using GIS software to help administration with planning and decision making
- Used Python and R to manipulate and analyze data from a wide range of sources
- Developed two Aspect Oriented Programming systems, one using Python metaobject protocol

Software Developer, Co-founder May 2000–Aug. 2002
Open Software Services, LLC Little Rock, AR

- Co-founded software development company, worked with clients to develop dynamic websites from concept to deployment; Python/Zope/RDBMS on Linux
- Developed searchable, scalable photo archive with a web based front end

Software Developer May 1999–Aug. 1999
University of Arkansas Computing Services Fayetteville, AR

- Implemented web based system in Java to simplify the software site licensing process

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Technical Skills

- **Languages:** C/C++, Python, Java. Language junkie, some experience with R, ML/OCaml, Scala, Haskell, Rust, Go, Coq, Javascript, Mathematica, Clojure, Erlang, Prolog, PHP, SQL
- **SCM tools:** Make, CVS, Subversion, Mercurial, Git
- Familiarity with Agile methodologies such as XP and Scrum, methodical unit tester

Teaching Experience

Visiting Assistant Professor Aug. 2012–present
Oklahoma State University Stillwater, OK

- Led students at the undergraduate level, explaining difficult concepts in a simple manner
- Supervised undergraduate class assistants in the Supplemental Instruction program

Teaching Assistant/Assistant Instructor Aug. 2005–May 2012
University of Texas, Austin Austin, TX

- Guided students toward success in class, teaching course material as well as study skills

Teaching Assistant Aug. 2004–May 2005
University of Arkansas Fayetteville, AR

- Provided remedial education for low performing students, college algebra and discrete math

Selected Invited Talks

- *Knots in handlebodies*, given at **Caltech**, 2012, **University of Texas**, 2013, **Nihon University (Tokyo)**, 2014
- *Thin position, graph clustering, and applications*, given at the **University of Iowa**, **Miami University**, **Colby College**, 2014

Selected Publications

- R. Sean Bowman, Doug Heisterkamp, Jesse Johnson, and Danielle O'Donnol. **An application of topological graph clustering to protein function prediction**, 2014.
- R. Sean Bowman, Doug Heisterkamp, and Jesse Johnson. **Thin tree position**, 2014.
- R. Sean Bowman and Stephen B. McCaul. **Fast Searching for Andrews-Curtis Trivializations**. *Experimental Mathematics*, 15(2), 2006.
- Kyle Cranmer and R. Sean Bowman. **PhysicsGP: A Genetic Programming Approach to Event Selection**. *Computer Physics Communications*, 2005.
- R. Sean Bowman and Henry Hexmoor. **Agent Collaboration and Social Networks**. *Proceedings of Knowledge Intensive Multiagent Systems (KIMAS)*, 2005.

Leadership and Management

UT Graduate Student Assembly Aug. 2008–May 2010

- Represented math department in student government group acting as liaison between graduate students, university administrators, and the larger university community

Co-organizer, 2015 Redbud topology conference Apr. 2014–Present

- Organizer for topology conference with participants from around the world, co-administrator of $25,108 NSF grant

Reviewer, Mathematical Reviews May 2014–present
Member, American Mathematical Society Aug. 2005–present