David Keith Love

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Education

Ph.D. in Applied Mathematics University of Arizona, Tucson, AZ
Cumulative GPA: 4.00/4.00, Expected Graduation: December 2013

Research Interests: Probability · Optimization · Stochastic Programming

Master of Science in Applied Mathematics University of Arizona, Tucson, AZ
Cumulative GPA: 4.00/4.00, Graduated: May 2009

Bachelor of Science in Engineering Mathematics University of Arizona, Tucson, AZ
Graduated Summa Cum Laude, May 2007

Research & Experience

Graduate Research Assistant, Department of Systems and Industrial Engineering, University of Arizona, Tucson, AZ, *January 2009-Present*

- Develop analytic methods for optimal decision-making using empirical data.
- Implement optimization program in Matlab and Python.
- Develop data visualization tools in Matlab and R.
- Apply optimization method to analyze future water distribution in Tucson.
- Communicate results in written and oral formats.

Student Fellow, Water Sustainability Program, University of Arizona, Tucson, AZ, *August 2012- May 2013*

- Implement stochastic optimization model of water distribution in Tucson.

G-TEAMS Fellow, Institute for Mathematics & Education, University of Arizona, Tucson, AZ, *June 2010-May 2011*

- Assisted teaching high school mathematics with an emphasis on improving communication of mathematical ideas.

Graduate Research Assistant, Arizona Center for Mathematical Sciences, University of Arizona, Tucson, AZ, *May 2007-December 2008*

- Interfaced with existing models of semiconductor lasers.
- Executed genetic algorithm-based optimization routine for producing ultrashort pulses.

Engineering Intern, Rincon Research Corporation & Arizona Space Grant Consortium, Tucson, AZ, *September 2006-April 2007*

- Wrote interfaces for extracting raw data from commercial-grade GPS receivers.
- Worked to evaluate GPS receiver ability to perform in applications requiring rapid, high quality data.

Publications

- Love, David and Bayraksan, Güzin, **A Likelihood Robust Method for Water Allocation under Uncertainty**, Accepted to *Proceedings of the 2013 Industrial and Systems Engineering Research Conference*.
- Love, David and Bayraksan, Güzin, **Overlapping batches for the Assessment of Solution Quality in Stochastic Programs**, *Proceedings of the 2011 Winter Simulation Conference*, pp. 4179-4190.
- Love, David, Kolesik, Miroslav and Moloney, Jerome V., **Optimization of Ultrashort Pulse Generation in Passively Mode-Locked Vertical External-Cavity Semiconductor Lasers**, *IEEE Journal of Quantum Electronics*, Vol. 45, Issue 5, pp. 439-445.

Presentations

- **A Likelihood Robust Method for Water Allocation under Uncertainty**, *2013 Industrial and Systems Engineering Research Conference*, May 21, 2013.
- **A Data-Driven Method for Robust Water Allocation under Uncertainty**, *Water Sustainability Program Student Fellowship Presentation*, April 22, 2013.
- **Two Best Practices for Scientific Computing: Version Control Systems & Automated Code Testing**, *Software Interest Group, University of Arizona*, February 18, 2013.
- **A Robust Method for Decision Making under Future Uncertainty**, *Modeling, Computation, Nonlinearity, Randomness, and Waves Seminar, University of Arizona*, January 24, 2013.
- **On the Use of Likelihood Robust Optimization for Data Driven Problems Under Uncertainty With Application to Water Allocation Problem**, *Los Alamos National Laboratory*, January 9, 2013.
- **On the Use of Likelihood Robust Optimization for Data Driven Problems Under Uncertainty**, *INFORMS Computing Society Conference, Santa Fe, NM*, January 8, 2013.
- **A Data-Driven Method for Robust Water Allocation Under Uncertainty**, *INFORMS Annual Meeting 2012, Phoenix, AZ*, October 15, 2012.
- **A Data-Driven Method for Water Allocation in Tucson**, *Applied Mathematics Student Brown Bag Colloquium, University of Arizona, Tucson, AZ*, October 5, 2012.
- **Introduction to Linux and the Math Department Computers**, *Software Interest Group, University of Arizona*, September 24, 2012.
- **Overlapping Batches for the Assessment of Solution Quality in Stochastic Programs**, *2011 Winter Simulation Conference, Phoenix, AZ*, December 13, 2011.
- **Optimal Decision Making Using Historic Data**, *Applied Mathematics Student Brown Bag Colloquium, University of Arizona*, November 4, 2011.
- **Using the Linux Command Line**, *Software Interest Group, University of Arizona, Tucson, AZ*, October 28, 2011.
- **Introduction to Networking with UNIX/Linux**, *SIAM Chapter Meeting, Applied Mathematics, University of Arizona*, September 14, 2010.
- **Overlapping Batches for the Assessment of Solution Quality in Stochastic Programs**, *12th International Conference on Stochastic Programming, Halifax, Nova Scotia*, August 20, 2010.
- **Overlapping Batches for Assessing Solution Quality in Stochastic Optimization**, *Modeling and Computation Seminar, Applied Mathematics, University of Arizona*, February 11, 2010.
- **Overlapping Batches for Variance Reduction in Optimality Gap Estimation in Stochastic Programming**, *INFORMS Annual Meeting 2009, San Diego, CA*, October 13, 2009.
- **Assessing Solution Quality in Stochastic Optimization**, *Applied Mathematics Student Brown Bag Colloquium, University of Arizona*, October 9, 2009.

Teaching

Instructor, Math 263: Introduction to Statistics and Biostatistics, University of Arizona, Tucson, AZ, *Fall 2011, Spring 2012*

- Lesson planned and lectured for 3 hours per week.
- Prepared and administered midterm and final exams.
- Graded all homework and exams.

Volunteer Assistant Instructor, City High School, Tucson, AZ, *Fall 2010-Spring 2011*

- Assisted instructor by giving perspective of active mathematician.
- Lectured on both school and real-world mathematics.
- Worked with students individually to help them understand mathematics.

Instructor, Math 112: College Algebra, University of Arizona, Tucson, AZ, *Spring 2009*

- Lesson planned and lectured for 3 hours per week.
- Prepared and administered midterm exams.
- Graded all homework and exams.

Outreach

Seminar Organizer, Software Interest Group, Department of Mathematics, Tucson, AZ, *Fall 2011-Present*

- Revive the seminar series after inactive years.
- Recruit speakers and schedule their talks.
- Manage the budget for the seminar.
- Communicate effective research practices to graduate students.

After School Program Mentor, Tucson Math Circle, Tucson, AZ, *Fall 2009-Present*

- Tutor local middle and high school students on mathematical puzzles.
- Enrich students' understanding of mathematics by providing interesting problems.

Mathematical Modeling Mentor, Math 485: Math Modeling, Tucson, AZ, *Spring 2010, 2012, 2013*

- Mentored undergraduate math students on research projects.
- Advised students on conducting research effectively.

Fellowships & Awards

- National Science Foundation Travel Grant, 2013
- Institute of the Environment Graduate Student Travel Award, 2013
- Water Sustainability Program Student Fellow, Fall 2012-Spring 2013
- G-TEAMS Fellowship, Fall 2010-Spring 2011
- Herbert E. Carter Travel Award, 2009
- VIGRE Fellowship, Summer-Fall 2009, Spring 2010
- Program in Applied Mathematics Fellowship, Fall 2007-Spring 2008

Professional Memberships

- Society for Industrial and Applied Mathematics (SIAM)
- Tau Beta Pi
- Institute for Operations Research and Management Science (INFORMS)

Computer Skills

- Microsoft Windows · Linux
- SQL · C/C++ · MATLAB · Maple · Python
- Microsoft Word · Excel · PowerPoint · LaTeX

Relevant Coursework

- Fundamentals of Optimization (SIE 545) · Algorithms, Graphs, and Networks (SIE 546) · Integer & Combinatorial Optimization (SIE 644) · Topics Of Optimization (SIE 649)
- Probability Theory (MATH 563) · Stochastic Processes (MATH 565A/B) · Stochastic Differential Equations (MATH 565C) · Theoretical Statistics (MATH 567A)

Citizenship

- United States