

Robert Bassett

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Fields of Specialization: Stochastic and convex optimization in statistical estimation, variational analysis, convex duality and applications

Experience

Research Intern Institute for Defense Analysis Summer '17

- Developed and implemented machine-learning techniques for large-scale datasets of relevance to the Department of Defense
- Applied optimization expertise to improve scalability and efficiency of contributions
- Coauthor of 2 papers, published internally

Systems Analyst Intern Sandia National Laboratories Summer '16

- Intern in Cyber-Analytics and Data Analysis group
- Developed and maintained Tensor Toolbox software package for multidimensional data analysis
- Contributed as a developer to the ParaChoice project, a modeling tool developed by Sandia for the U.S. Department of Energy.

Research Mathematician National Security Agency Summer '15

- Approved for Top Secret // Special Compartmented Information security clearance with full-scope polygraph examination.
- Applied expertise in optimization, statistics, and applied mathematics toward machine learning and image processing projects.
- Designed, developed and evaluated algorithms in python/C for large-scale data analysis
- Briefed Admiral Michael Rogers, Director of National Security Agency

Research Assistant University of California Davis Aug. '13-present

- Topics of study: Operations Research, Convex and Stochastic Optimization, with an emphasis on applications to statistical estimation, algorithm development and implementation.
- Professional, research level writing and communication skills exercised daily.

Education

University of California Davis
Ph.D. Mathematics

Advisor: Roger Wets
Expected: Spring 2018

M.A. Mathematics

Awarded: June 2015

California State University Bakersfield
B.S. Mathematics, Magna Cum Laude

Awarded: May 2013

Publications and Presentations

- *Trendi-Splines: Maximum Likelihood Density Estimation with a Total Variation Penalty*. Presented at '17 SIAM Optimization Conference
- *Maximum a Posteriori Estimators as a Limit of Bayes Estimators*, with Julio Deride. Accepted to *Mathematical Programming*. December 2016
- *Log-Concave Duality in Estimation and Control*, with Michael Casey and Roger Wets. In Review. May 2016
- *Duality in Estimation and Control with Log-Concave Noise*. Presented as contributed talk at International Conference for Stochastic Programming in Buzios, Brazil. June 2016
- *Duality Between Epi-Spline Estimation and Control*. Presented as an invited talk at Électricité de France in Paris, France. April 2016
- *A Quantitative Version of the Doignon-Bell-Scarf Theorem*, with I. Aliev, J. De Loera, Q. Louveaux: *Combinatorica*. May 2016
- *Multistage Portfolio Optimization: A Duality Result in the Conic Market Model*, with Khoa Le. Preprint available at arxiv.org
- *Lower Bounds in an Extension of the Doignon-Bell-Scarf Theorem*. Presented at 2014 Integer Programming and Combinatorial Optimization Conference in Bonn, Germany
- Paper published internally with the National Security Agency (2015)
- *Epi-spline Technology in Estimating Stochastic Processes with Limited Information*. Presented at 2015 Workshop on Stochastic and Robust Optimization, Berkeley CA

Honors and Distinctions

- 2017 SIAM Student Chapter Certificate of Recognition
- UC Davis SIAM Student Chapter Officer: 2016-2018
- Gaspard Monge Program for Optimization and Operations Research (PGMO) grant for project *Solar Forecasting with Epi-Splines*. 2015/16
- GAANN Fellowship (Graduate Assistance in Area of National Need) 2014-2015
- UC Davis Graduate Fellowship 2013-2014
- Outstanding Graduating Senior, CSUB School of Natural Sciences Mathematics and Engineering: May 2013
- Math in Moscow Alumni, Class of Fall 2013

Relevant Skills

- Programming experience in: C/C++, Python, Julia, R, Java and Matlab
- Python experience includes TensorFlow, Sklearn, Numpy, and Scipy
- Exposure to open source project development in Julia, R, SAGE and Octave; familiar with version control software and large-scale collaborative development
- 7+ years working with Linux operating system