Jeffrey M. Hokanson

Postdoctorial Fellow
Department of Applied Mathematics and Statistics
Colorado School of Mines
1500 Illinois Street
Golden, CO 80401

Phone: 832-655-3185
Email: hokanson@mines.edu

Education

Ph.D. Computational and Applied Mathematics, Rice University, December 2013

Thesis: Numerically Stable and Statistically Efficient Algorithms for Large Scale Exponential Fitting

Advisors: Mark Embree and Steven Cox

M.A. Computational and Applied Mathematics, Rice University, May 2009

Thesis: Magnetic Damping of an Elastic Conductor

Advisors: Mark Embree and Steven Cox

B.S. Physics, Rice University, May 2007, cum laude

Research Experience

Colorado School of Mines; Golden, CO

2016-present: Developing algorithms to exploit active subspaces for design under uncertainty problems

University of Texas MD Anderson Cancer Center; Houston, TX

2014-2016: Analyzed flow cytometry data from the CyTOF instrument in collaboration with multiple labs

Computational and Applied Math Department, Rice University; Houston, TX

2007 - 2013: Devised and implemented algorithms for inverse eigenvalue problems and parameter estimation

Brown Teaching Grant, Rice University; Houston, TX

2007: Developed the equipment and manual for a lab to accompany an introductory linear algebra class

Physics Department, Rice University; Houston, TX

2006: Implemented magnetohydrodynamic models for space weather modeling

Research Grants

CCSG New Technology Grant *Web User Interface for High Parametric Analysis*, PHS398 (2014) $30,000; co-author.

Publications

Peer-Reviewed Publications

Steven J. Cox, Mark Embree, Jeffrey M. Hokanson, *One can hear the composition of a string: experiments with an inverse eigenvalue problem*, SIAM Review, 54 (2012) pp. 157–178

Submitted Manuscripts

Jeffrey M. Hokanson and Paul G. Constantine *Data-driven polynomial ridge approximation using variable projection* arXiv:1702.05859

Jeffrey M. Hokanson, *Fast Minimum Uncertainty Estimates for the Exponential Fitting Problem* arXiv:1508.05890

Other Publications

Steven J. Cox, Mark Embree, Jeffrey M. Hokanson *CAAM335 Matrix Analysis: Physical Laboratory*

Presentations

Contributed Talks

Fast Data-Driven System Identification from Impulse Response Measurements, SIAM Conference on Computational Science and Engineering, Atlanta, GA, 2017

Fast Minimum Uncertainty Estimates for the Exponential Fitting Problem, SIAM Annual Meeting, Boston, MA, 2016

CLEAN Corrects Variation in Sample Preparation, CYTO2016, Seattle, WA, 2016

Fast Automatic System Identification Using Optimization, 16th Congress of the International Linear Algebra Society, Pisa, Italy, 2010

Invited Talks

Trading Statistical Efficiency for Speed in Parameter Estimation Problems, Virginia Tech, Blacksburg, VA, 2015

Fast Automatic System Identification Using Optimization, Katholieke Universiteit Leuven, Belgium, 2010

Posters

Data-driven Polynomial Ridge Approximation Using Variable Projection, SIAM Conference on Computational Science and Engineering, Atlanta, GA, 2017

High Dimensional Cytometry Data Visualization Using Parallel Coordinates, CYTO2016, Seattle, WA, 2016

Speeding Large Nonlinear Least Squares Problems by Near-Optimal Data Compression, MMDS, Berkeley, CA, 2014

Workshops

Model Reduction of Transport-dominated Phenomena, Berlin, Germany, 2015

Gene Golub SIAM Summer School, Selva di Fasano, Italy, 2010

Other Funding

Shared Resource Lab Travel Award ($1000), 2016

Teaching Experience

Rice University, Computational and Applied Mathematics Department; Houston, TX

CAAM 335: Matrix Analysis, *Teaching Assistant*, Spring 2014

CAAM 336: Differential Equations in Science and Engineering, *Teaching Assistant*, Spring 2014

CAAM 336: Differential Equations in Science and Engineering, *Instructor of Record*, Spring 2012

CAAM 336: Differential Equations in Science and Engineering, *Instructor of Record*, Fall 2010

CAAM 335: Matrix Analysis, *Teaching Assistant*, Fall 2014

CAAM 335 Lab: Matrix Analysis Laboratory *Teaching Assistant* Spring 2010

CAAM 335 Lab: Matrix Analysis Laboratory *Teaching Assistant* Fall 2009

CAAM 335: Matrix Analysis, *Teaching Assistant*, Spring 2009

CAAM 335 Lab: Matrix Analysis Laboratory *Teaching Assistant* Spring 2008

CAAM 335 Lab: Matrix Analysis Laboratory *Teaching Assistant* Fall 2007

Professional Service

Reviewer: SIAM Journal on Scientific Computing

Society for Industrial and Applied Mathematics, Rice Student Chapter; Houston, TX

President (2008 - 2009): Organized an event for faculty, graduate students, and undergraduate students to meet Cleve Moler, creator of Matlab

Last updated: April 10, 2017