Rebecca Elizabeth Morrison

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Position

Assistant Professor, Department of Computer Science, University of Colorado Boulder, August 2018 - present

Education

Massachusetts Institute of Technology, Postdoc in Uncertainty Quantification, Advisor: Dr. Youssef Marzouk, February 2016 - July 2018

The University of Texas at Austin, Ph.D. in Computational Science, Engineering, and Mathematics, Advisor: Dr. Robert Moser, Dissertation: *On the representation of model inadequacy: A stochastic operator approach*, January 2016

The University of Texas at Austin, M.S. in Computational and Applied Mathematics, May 2012

Scripps College, B.A. in Physics, Advisor: Dr. Adam Landsberg, May 2008

Grants & Awards

NASA Space Weather with Quantified Uncertainties Grant: *Ensemble Learning for Accurate and Reliable Uncertainty Quantification* (Co-PI), $2,891,954, October 2020 - September 2023

Johnson&Johnson Women in STEM2D Award: *Discovering Dynamic Structure from Data* (PI), $150,000, August 2019 - July 2022

Association for Women in Mathematics/NSF Travel Grant, $600, 2017

Best Student Paper Award of the World Congress on Engineering and Computer Science 2011

Computational and Applied Mathematics Fellowship, UT Austin, September 2009 - August 2013

Publications

6. R. E. Morrison, A. Cunha. *Embedded discrepancy operators: A case study of Zika modeling.* Chaos: An Interdisciplinary Journal of Nonlinear Science, 30(5):051103 (2020).

5. R. E. Morrison, T. A. Oliver, R. D. Moser. *Representing model inadequacy: A stochastic operator approach.* ASA/SIAM Journal on Uncertainty Quantification 6 (2), 457-496 (2018).

4. R. E. Morrison, R. Baptista, Y. Marzouk. *Beyond normality: Learning sparse probabilistic models in the non-Gaussian setting.* Advances in Neural Information Processing Systems 30 (NIPS 2017), 11 pages. (Acceptance rate: 21%)

3. R. E. Morrison, C. M. Bryant, G. Terejanu, S. Prudhomme, K. Miki. *Data partition methodology for validation of predictive models.* Computers and Mathematics with Applications, 66 (10), 2114-2125 (2013).

2. R. E. Morrison, C. M. Bryant, G. Terejanu, K. Miki, S. Prudhomme. *Optimal data split methodology for model validation.* Proceedings of the World Congress on Engineering and Computer Science 2011, p1038-1043. (Acceptance rate: 53%)

1. R. E. Morrison, A. S. Landsberg, E. J. Friedman. *Combinatorial games with a pass: A geometric approach.* Chaos 21, 043108 (2011).

Preprints

R. E. Morrison. *Exact model reduction of the generalized Lotka-Volterra equations.* (In review) arxiv.org/abs/1909.13837

R. E. Morrison. *Data-driven corrections of partial Lotka-Volterra models.* (In review) arxiv.org/abs/1910.08191

Selected Talks

"Representing model error in SEIR-type models: A case study of the 2016 Zika outbreak in Brazil" Computing Research Association 2020 Virtual Conference Lightning Talk

"Learning sparse non-Gaussian graphical models" Argonne National Laboratory, May 2020

"Representing model inadequacy in reduced models of interacting systems" Workshop on Statistical Perspectives on Uncertainty Quantification, SAMSI, May 2019

"Beyond normality: Learning sparse probabilistic graphical models in the non-Gaussian setting" *Talks Seminar, Institute for Computational Mathematics and Engineering, Stanford, May 2017

Courses Taught

CSCI 7000: Validation and Uncertainty Quantification for Computational Models (Fall 2018, Spring 2020)

CSCI 4802/5802: Data Science Team (Fall 2020)

CSCI 2820: Linear Algebra with Computer Science Applications (Spring 2019, Fall 2019)

Professional Service

Reviewed articles for:
Advances in Neural Information Processing Systems (NeurIPS), Chaos, Computer Methods in Applied Mechanics and Engineering, Discrete Applied Mathematics, IEEE/ACM Transactions on Networking, International Conference on Machine Learning, Nonlinear Dynamics, Pattern Recognition Letters, SIAM/ASA Journal on Uncertainty Quantification

Organizer for the Workshop Celebrating Diversity (SIAM), March 2019 and July 2020

Reviewer for NCWIT 2020 Aspirations in Computing awards

Mentor at Rocky Mountain Celebration of Women in Computing, November 2018

Volunteer Tutor for 8th grade math, with Austin Partners in Education (APIE)
November 2013 - December 2014

University Service

CS Graduate Curriculum Committee member, January 2020 - present

CS Undergraduate Curriculum Committee member, August 2018 - December 2019

Reviewer for Johnson&Johnson WiSTEM2D 2020 and 2021 awards (internal CU Boulder review)

School of Computing Task Force member, Spring 2019

Membership

Society for Industrial and Applied Mathematics (SIAM)

Association for Women in Mathematics (AWM)