Rebecca Elizabeth Morrison

Assistant Professor, Computer Science Department, University of Colorado Boulder

Computer Science Department
1111 Engineering Drive
ECOT 717, 430 UCB
Boulder, CO 80309

phone: 303-735-6139
email: rebeccam@colorado.edu
webpages: www.colorado.edu/cs/rebecca-morrison
rebeccaem.github.io

Research Interests

Design of data-driven models that respect physical constraints/information

Mathematical representations of model error/discrepancy

Probabilistic graphical models and sparsity of Markov random fields

Calibration, validation, and uncertainty quantification for predictive models

Bayesian probability as a logical framework

Professional Preparation

Massachusetts Institute of Technology; Postdoc in Uncertainty Quantification, January 2016 - July 2018

The University of Texas at Austin, Ph.D. in Computational Science, Engineering, and Mathematics, January 2016

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

Scripps College, B.A. in Physics, May 2008

Grants & Awards

Johnson&Johnson Women in STEM2D award, 2019

AWM-NSF Travel Grant, 2017

Best Student Paper Award of the International Conference on Modeling, Simulation and Control; World Conference on Engineering and Computer Science, 2011

CAM Fellowship, UT Austin, ICES, September 2009 - August 2013

Publications & Reports

10. R. E. Morrison. *Exact model reduction of the generalized Lotka-Volterra equations.* In preparation.
9. R. E. Morrison, R. Baptista, Y. Marzouk. *Learning non-Gaussian probabilistic graphical models.* In preparation.
8. R. E. Morrison, A. Cunha. *Embedded discrepancy operators: A case study of Zika modeling.* In review.
7. R. E. Morrison. *Embedded discrepancy operators in reduced models of interacting systems.* In review.
6. 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).
5. R. E. Morrison, R. Baptista, Y. Marzouk. *Beyond normality: Learning sparse probabilistic models in the non-Gaussian setting.* NeurIPS (2017).
4. R. E. Morrison. *On the representation of model inadequacy: A stochastic operator approach.* Dissertation in Computational Science, Engineering, and Mathematics. ICES, UT Austin, January 2016.

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.* In proceedings of and presented at the World Congress on Engineering and Computer Science. UC Berkeley, October 2011.

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

Courses

Validation and Uncertainty Quantification for Computational Models (graduate)

Linear Algebra with Computer Science Applications (undergraduate)

Service

Reviewed articles for:
SIAM Journal on Uncertainty Quantification, Computer Methods in Applied Mechanics and Engineering, International Conference on Machine Learning, Discrete Applied Mathematics, Pattern Recognition Letters

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

Reviewer for NCWIT 2020 Aspirations in Computing awards

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

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

Membership

Society for Industrial and Applied Mathematics (SIAM)

Association for Women in Mathematics (AWM)