

EDUCATION

- Ph.D.**, Applied Mathematics, North Carolina State University, GPA 3.95/4.00 May 2022 (Expected)
Advisor: Ilse C. F. Ipsen
- M.S.**, Applied Mathematics, North Carolina State University, GPA 3.91/4.00 May 2019
- B.S.**, Mathematics, George Mason University, Magna Cum Laude, GPA 3.74/4.00 May 2017

SKILLS

Research: Scientific Computing, Probabilistic Numerics, Machine Learning, Numerical Linear Algebra, Bayesian Inference, Surrogate Modeling, Tensor Decompositions

Computational: Python (incl. TensorFlow and PyTorch), Julia, Matlab, Mathematica, LaTeX, Git, Shell Scripting

PROFESSIONAL EXPERIENCE

North Carolina State University, Raleigh, NC 2018 – Present
Graduate Student Researcher

- Investigates probabilistic numerical methods that enable errors to be quantified in computational pipelines
- Develops efficient implementations of probabilistic numerical methods using Python

MIT Lincoln Laboratory, Lexington, MA 2021
Summer Research Program Intern

- Conducted research in Bayesian methods to improve calibration of neural networks used in classification problems
- Implemented Bayesian neural networks with TensorFlow, deployed Bayesian neural networks on GPU cluster

Sandia National Laboratories, Livermore, CA 2019
Computer Science Research Institute Summer Intern

- Investigated different methods of incorporating physical model parameters in functional tensor train models
- Examined how choice of optimization algorithm affected training speed of functional tensor train models

George Mason University, Fairfax, VA 2015 – 2017
Undergraduate Student Researcher

- Developed numerical solution in Matlab to PDE model of contact lens motion in blinking eye
- Investigated group theory conjectures by generating and analyzing large set of test problems with Mathematica

PAPERS

1. T. W. REID, I. C. F. IPSEN, J. COCKAYNE, AND C. J. OATES, *BayesCG as an uncertainty aware version of CG*, 2021, <https://arxiv.org/abs/2008.03225>
Related software: https://github.com/treid5/ProbNumCG_Supp
2. J. COCKAYNE, I. C. F. IPSEN, C. J. OATES, AND T. W. REID, *Probabilistic iterative methods for linear systems*, Journal of Machine Learning Research, to appear, (2021), <https://arxiv.org/abs/2012.12615>
3. D. M. ANDERSON, M. CORSARO, J. HORTON, T. REID, AND P. SESHAIYER, *Tear film dynamics with blinking and contact lens motion*, Mathematical Medicine and Biology: A Journal of the IMA, 38 (2021), pp. 355–395, <https://doi.org/10.1093/imammb/dqab010>
4. T. REID, C. SAFTA, A. GORODETSKY, J. JAKEMAN, AND K. SARGSYAN, *Implementing physical dependence in the functional tensor train*, in Computer Science Research Institute Summer Proceedings 2019, M. Powell and M. J. Parks, eds., Technical Report SAND2020-9969R, Sandia National Laboratories, 2020, pp. 55–65

CONFERENCE PRESENTATIONS

Talks

1. SIAM Conference on Uncertainty Quantification, Munich, Germany March 2020
Prior Distributions and Test Statistics for the Bayesian Conjugate Gradient Method
Online due to pandemic: <http://probabilistic-numerics.org/meetings/SIAMUQ2020/>
2. American Physical Society Division of Fluid Dynamics Meeting, Portland, OR November 2016
Contact Lens and Tear Film Dynamics During Blinking
3. Shenandoah Undergraduate Mathematics Conference, Harrisonburg, VA September 2016
Solving a Tear Film Model with a Spectral Method

Posters

1. SIAM Conference on Computational Science & Engineering, Fort Worth, TX March 2021
Estimating Error with the Bayesian Conjugate Gradient Method
2. Sandia National Laboratories Posters on the Patio, Livermore, CA July 2019
Approximating Data With Stochastic and Physical Dependence Using Functional Tensor Train Models
3. SIAM Conference on Computational Science & Engineering, Spokane, WA February 2019
Computational Developments for the Bayesian Conjugate Gradient Method
4. National Conference on Undergraduate Research, Memphis, TN May 2017
Special Words in Free Groups
5. Joint Mathematics Meetings, Atlanta, GA January 2017
Solving a Tear Film Model with a Spectral Method
6. Geometry Labs United Conference, Urbana, IL August 2015
Special Words in Free Groups

AWARDS

- NSF RTG Fellowship 2018 – Present
- SIAM Student Travel Award 2020
- George Mason University OSCAR Student Excellence Award 2017
- APS-DFD Travel Grant 2016
- Mason Excellence Scholarship 2014 – 2017

GRADUATE COURSEWORK

- Numerical Analysis
- Matrix Methods in Data Science
- Uncertainty Quantification
- Nonlinear Eqs. & Unconstrained Optimization
- Theory & Applications of Machine Learning
- Data Driven Modeling of Dynamical Systems

SERVICE

- Peer reviewer for *Statistics and Computing*
- NCSU SIAM student chapter representative to SIAM Student Days 2019
- NCSU SIAM student chapter webmaster 2018 – Present
- SIAM booth volunteer at USA Science and Engineering Festival 2018

PROFESSIONAL MEMBERSHIPS

- Society for Industrial and Applied Mathematics (SIAM)
- American Mathematical Society (AMS)