Jake Callahan

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jcallahan4
jake-callahan

Education

Doctor of Philosophy, The University of Arizona — Tucson, AZ
Applied Mathematics — 2023–Present

Master of Science, Brigham Young University — Provo, UT
Mathematics — 2021–2023

- Thesis: "Hamiltonian Monte Carlo for Reconstructing Historical Earthquake-Induced Tsunamis."
- Advisor: Jared Whitehead

Bachelor of Science, Brigham Young University — Provo, UT
Mathematics: Applied and Computational Emphasis — 2016–2020

Publications

Journal Articles

[1] A. King, J. Murri, **J. Callahan**, A. Russell, and T. Jarvis, "A mathematical analysis of redistricting in Utah", *Statistics and Public Policy*, vol. 9, no. 1, 2022.

In Preparation

[2] **J. Callahan**, T. Catanach, K. Monogue, and R. Villareal, "Bayesian OED for sensor placement: Analysis and optimization of seismo-acoustic monitoring networks with Bayesian optimal experimental design", 2023.

Conference Proceedings

[3] **J. Callahan** and T. Catanach, "Importance sampling in Bayesian OED for sensor placement", in *Computer Science Research Institute Summer Proceedings 2021*, The Computer Science Research Institute at Sandia National Laboratories, Albuquerque, NM, 2021, pp. 283–292.

Invited Presentations and Posters

[4] T. Catanach, **J. Callahan**, K. Monogue, and R. Villareal, "Bayesian OED for sensor placement: Analysis and optimization of seismo-acoustic monitoring networks with Bayesian optimal experimental design", SIAM Conference on Computer Science and Engineering, Amsterdam, The Netherlands, 2023.

Contributed Presentations and Posters

[5] **J. Callahan**, J. Whitehead, R. Harris, T. Paskett, C. Noorda, and R. Wonnacott, "Markov-chain Monte Carlo methods for reconstructing historical earthquake-induced tsunamis", American Geological Union Fall Meeting, Chicago, IL, USA, 2022.

[6] **J. Callahan**, J. Whitehead, R. Harris, T. Paskett, C. Noorda, and R. Wonnacott, "Markov-chain Monte Carlo methods for reconstructing historical earthquake-induced tsunamis", Geological Society of America Connects, Denver, CO, USA, 2022.

Teaching

- **Graduate Teaching Assistant**, The University of Arizona — Fall 2023
  College Algebra (Math 112)
  - *Assisted in in-class learning activities and periodically prepared and delivered lectures*
  - *Graded homework*
  - *Held office hours*
- **Graduate Student Instructor**, Brigham Young University — Spring 2022
  Quantitative Reasoning (Math 102)
  - *Sole instructor*
  - *Prepared and delivered easy-to-understand lectures designed for students with poor ACT Math scores.*
  - *Wrote and graded exams and homework*
  - *Held office hours*
- **Graduate Teaching Assistant**, Brigham Young University — Fall 2021–Spring 2023
  Theory of Analysis 2 (Math 342)
  - *Held office hours*
  - *Graded homework*
- **Graduate Teaching Assistant**, Brigham Young University — Fall 2021
  Calculus 1 (Math 112)
  - *Prepared and delivered recitation lectures*
  - *Graded homework and assisted in grading uniform exams*
  - *Held office hours*

Work Experience

Sandia National Laboratories — Livermore, CA
Research and Development Intern, Computer Science Research Institute — May 2021–present
- Supervisor: Tommie Catanach

Utah National Guard — Spanish Fork, UT
Soldier — August 2020–August 2023

Orderboard, Inc. — Orem, UT
Data Scientist — May 2019–May2021

Honeywell, Inc — Charlotte, NC
Automation and Cognitive Services Intern — Summer 2020

Mini-symposia Organized

Is Quantifiable Uncertainty Achievable? A (mostly) Bayesian Perspective — Logan, UT
SIAM Northern States Section Conferences — April 2023
- 6 speakers, co-organized with Jared Whitehead and Raelynn Wonnacott

Workshops Attended

- **Uncertainty Quantification Summer School** August 2023
  University of Southern California, CA, USA
- **Summer School on the Theory and Application of Lattices** August 2023
  University of Texas at Dallas, TX, USA

Extracurricular Activities

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