Experience

LexiFi

Software Engineer   *Sept. 2024 - present*

Input Output Global

Software Engineer (Haskell)   *Sept. 2023 - July 2024*

Team member in a blockchain indexing framework project, and engineer in the innovation group, turning research into software design into proof-of-concept applications. IOG is the lead research and development organization behind the Cardano blockchain.

NoviSci (Target RWE)

Advanced Statistical Software Developer   *May 2023 - Sept. 2023*

Primary Haskell developer for internal framework for processing electronic health records data into analysis-ready datasets for statistical inference studies. Leading R developer for licensed statistical libraries.

Senior Statistician for Software Development   *June 2021 - April 2023*

Software development in Haskell and R for statistical analysis, causal inference and large-scale data-processing for in-house epidemiological studies using real-world data.

Dept. of Statistics and Operations Research, UNC Chapel Hill

Research assistant   *2019-2021*

Uncertainty quantification, multifidelity modeling and exploratory statistical analysis of extreme ship motions and loads resulting from a computational physics model, in grant funded by the Office of Naval Research.

Data science course development   *2017*

Core member for technical content of a group creating the first undergraduate data science course in the department, part of the Data@Carolina initiative. Created at least 30 percent of materials. A collaboration with S. Bhamidi, I. Carmichael and D. Glotzer.

Teaching   *2017-2021*

Walter L. Deemer Excellence in Teaching Award.

Instructor for Introduction to data science (STOR 320); Decision models for business (STOR 113); Introduction to data models (STOR 155); Linear algebra camp for 1st-year graduate students.

Assistant for Measure theory (STOR 634); Machine learning (STOR 565); Introduction to data models (STOR 155); Real analysis camp for 1st-year graduate students.

General Administration, UNC System

Analyst, Finance Division   *2014-2016*

Forecasts and risk analyses of enrollment and financial aid requirements for the finance division of North Carolina's 16-campus state university system. Development of methods using a variety of machine learning tools, including clustering, regression, tree methods, time series analysis, MCMC/Hamiltonian Monte Carlo.

NC Department of Stat Treasurer

Policy Analyst (contractor)   *2013-2014*

Data cleanup and statistical survival analysis of Teachers' and State Employees' Retirement System datasets. Policy briefs for legislative or executive audiences, including research and data analysis, written for decision-makers.

Academics

Degree	Institution	Year
PhD, Statistics	University of North Carolina at Chapel Hill	2021
Master of Public Policy	Duke University	2014

Research

- Convergence of reflected diffusions arising from interacting particle systems
- Monte carlo and coupling methods for statistical estimation of extremes for stochastic processes
- Master's project: Survival analysis of work in retirement for the N.C. Teachers' and State Employees' Retirement System

Publications

Note: In the field of probability theory, authors are listed in order of last name not of contribution.

Inert drift system in a viscous fluid: Steady state asymptotics and exponential ergodicity
    with Sayan Banerjee
    Trans. Amer. Math. Soc. 373 (2020), 6369-6409
Dimension-free local convergence and perturbations for reflected Brownian motions
    with Sayan Banerjee
    Ann. Appl. Probab. 33(1): 376-416 (February 2023)

Convergence of reflected diffusions from interacting particles
Dissertation (2021)
On Extending Multifidelity Uncertainty Quantification from Non-Rare to Rare Problems
with Vladas Pipiras
Proceedings of the 17th International Ship Stability Workshop (2019)

Technical skills

Language	Proficiency
Haskell	★★★★
R	★★★★
SQL	★★
Rust	★★
Python	★★
Bash	★★
Stan	★

Linux user for more than 10 years at home and at work. Moderate experience with deployment and CI environments using Docker and Nix.

From ★, can-make-it-work, to ★★★★, proficient and professional.

Projects

random-cycle

A Haskell library for efficient uniform random sampling of cycle partition graphs on sets of vertices, and partitions of lists or vectors. Selection can be subject to conditions. A personal project.

interval-algebra

An implementation of Allen's interval algebra for temporal logic, used regularly for epidemiological applications at NoviSci (Target RWE). Credit for a substantial portion of the code goes to the previous author, but I maintained the package for most 2023 and am responsible for most of the code in the `Core` module.