

EDUCATION	Northwestern University , Evanston, IL Bachelor of Arts <i>Major: Mathematics; Major: Statistics</i>	September 2019 - June 2023
RESEARCH	Neuro-Data Scientist The Miri Lab at Northwestern University <ul style="list-style-type: none">• Analyze neural time series recorded in rodents during decision-making task<ul style="list-style-type: none">◦ Use state-space models to infer neural dynamics governing decision-making◦ Predict behavioral covariates and trial type from neural data• Code corresponding visuals in Python and MATLAB• Present results weekly to Principal Investigator Dr. Andrew Miri and Postdoctorate Michaël Elbaz	July 2023 - Present
MATH PROJECTS	Mixing Times for Random Walks on Groups Independent Study with Dr. Ursula Porod <ul style="list-style-type: none">• Studied and presented probabilistic and spectral techniques for evaluating mixing times for random walks on groups• Completed exercises for bounding mixing times on hypercubes, toruses, binary trees, permutations, discrete cycle• Read research papers on mixing times for card-shuffling techniques and cut-off phenomenon	Fall 2021
	Ergodic Theory Directed Reading Program with Dr. Christian Gorski <ul style="list-style-type: none">• Proved Poincaré recurrence theorem, Von Neumann ergodic theorem, equivalencies of ergodicity, and $\mathcal{L}^2(\mu)$ as metric and vector space• Proved existence of limiting transition probability for recurrent Markov chains using ergodic theorem• Presented isomorphism between interval $[0, 1)$ and $\{0, 1\}^{\mathbb{N}}$ using binary expansions to Math Department	Spring 2023
	Brownian Motion and Dirichlet Problem Directed Reading Program with PhD Candidate Nick Lohr <ul style="list-style-type: none">• Used Fourier series to solve heat equation on interval with Dirichlet and Von Neumann boundary conditions• Solved Laplace's equation on disc using Fourier series and Poisson kernel• Constructed Brownian motion as limit of simple random walk• Coded and presented simulations solving Laplace's equation on disc using Brownian motion to Math Department	Fall 2020
	Independent Statistical Work GitHub Page <ul style="list-style-type: none">• Coded and created graphics for Markov chain Monte Carlo methods on Ising model, cryptography cipher, and traveling salesman problem	Fall 2021 - Present

- Coded and created graphics for sequential Monte Carlo particle filter on neural state-space model
- Coded and created graphics for multiple imputation algorithm

COURSEWORK

Notable Statistics Courses

- Bayesian Statistics: conjugate and non-informative priors, hierarchical models, Laplace approximations, Markov chain Monte Carlo
- Computational Statistics: importance and rejection sampling, bootstrap and jackknife resampling, mixture models and EM algorithm, Monte Carlo integration
- Graduate Bioinformatics: single cell RNA-seq, dendrograms, hidden Markov models, Viterbi algorithm, t-distributed stochastic neighbor embedding
- Nonparametric Statistics: kernel density and regression estimation

Notable Mathematics Courses

- Graduate Measure Theoretic Probability: measurable spaces/functions, Borel-Cantelli lemmas, weak and strong law of large numbers, characteristic functions, central limit theorem
- Honors Probability and Stochastic Processes II, III: discrete and continuous time Markov chains, diffusion processes, martingales
- Advanced Linear Algebra: vector spaces, linear maps, eigenvectors and eigenvalues, spectral theory, singular value decomposition
- Math Models in Finance: Brownian motion, Black-Scholes equation

TEACHING ASSISTANT

Statistics Department Teaching Assistant
Evanston, IL

Fall 2022, Winter 2023

- Held office hours and graded homeworks for STAT 201 and 202

PROGRAMMING SKILLS

Python, R, MATLAB, Bash, LaTeX