

Keerthana Gurushankar

[Email](#) | [Personal Website](#) | [GitHub](#) | [LinkedIn](#) | [Google Scholar](#)

EDUCATION

Carnegie Mellon University

PhD, Computer Science

Aug 2022 – (expected) May 2027

Research focus: *Performance Modeling for Machine Learning Systems*

B.S., M.S., Mathematics, GPA: 3.80

Aug 2017 – May 2021

WORK EXPERIENCE

- **(Incoming) Quantitative Research Intern, Two Sigma** May 2026 – Aug 2026
Statistical modeling and algorithmic research for quantitative trading strategies
- **PhD AI Infrastructure Intern, AMD** May 2025 – Aug 2025
Performance Engineering for Large Language models (LLMs) Inference optimization
 - Improved performance (throughput, memory, power) of Quantization algorithms via profiling & optimization
 - Parallelized & 10x sped up a key algorithm for team via Python multithreading & workload redistribution
 - Contributed to PyTorch & KTransformers, improving compatibility and performance for AMD hardware
- **Machine Learning Intern, CapSen Robotics** May 2023 – Aug 2023
Computer Vision models and software for robotics applications
 - Built & tuned segmentation-based ML models for 3D object detection & pose estimation for robot applications
 - Contributed performance improvements to production-level project, reducing failure rate from 1/1000 to 1/3000
 - Designed & developed new calibration method in C++/CUDA, reduced calibration time 6-fold
- **Pre-doctoral Researcher, CMU** May 2021 – May 2022
Neural modeling with Information theoretic decompositions
 - Modeled neural data with information theory to detect causal relations, leading to publications in top conferences
 - Deduced tractability results using probability, linear algebra, algorithmic methods & data visualization
 - Collaborated with and presented work to researchers of diverse technical backgrounds

RELEVANT PROJECTS

- **Data Integrity in Clinical Trials - Citadel Global PhD Datathon 3rd Place Winner** Nov 2024 - Nov 2024
 - Produced a novel large-scale statistical analysis for data integrity in clinical trials (using Python/pandas/scipy)
 - Identified 1k trials with low integrity data among 22k published in 2014-24, using chi-square/Benford's law tests
 - Best among 30 submissions, 1k+ applicants worldwide, awarded \$2.5k for "rigorous & highly practical insights"
- **Deep Learning Library Implementations** Aug 2022 – Dec 2022
 - Built a complete deep learning library from scratch, with basic implementations of PyTorch and Numpy
 - Wrote efficient CPU/GPU backends using C++/CUDA, autodiff support, modules for optimizers & data loaders
- **Statistical Detector for Cortical Spreading Depressions** Aug 2018 – Apr 2019
 - Designed & implemented (in MATLAB) a statistical detector for anomalous brain waves using ECoG data
 - Modeled & tested Maximum Likelihood Detection, to automate work currently done by expert inspection

SKILLS

Programming Languages: Python (pandas/PyTorch), C/C++/CUDA, SML

HONORS/AWARDS

2025 Reproducibility Hackathon - Best Original Data Visualization in city-wide hackathon implementing recent ML paper
2022 Irwin Mark Jacobs & Joan Klein Jacobs Presidential Fellowship - presented prestigious fellowship/funding at MIT
2019 CMU Quantathon - member of winning team solving quantitative finance problem in university-wide competition
2018 Putnam Competition - ranked in top 500 nationally
2017 International Physics Olympiad Selection Camp - top 35 students in Physics nationally

PUBLICATIONS

- **Decision Making under Uncertainty (Multi-armed Bandits)**
 - LookAhead: Index-Optimal Scheduling for a Delay Costs Problem, Queueing Systems
 - [Improving Upon the generalized c-mu rule: a Whittle approach](#), conditionally accepted to Operations Research
- **Information Theory & Causal Inference**
 - [A Minimal Intervention Definition of Reverse Engineering a Neural Circuit](#), ISIT-NeurIT 2024
 - [Capturing and Interpreting Unique Information](#), ISIT 2023
 - [Extracting Unique Information through Markov Relations](#), Allerton 2022
 - [Sharp bounds on p-norms for sums of independent uniform random variables](#), Journal d'Analyse Mathématique
- **Software Systems**
 - [Latency Guarantees for Caching with Delayed Hits](#), INFOCOM 2025
 - [What's in a Name? Linear Temporal Logic Literally Represents Time Lines](#), VISSOFT 2023

SELECTED COURSEWORK

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|----------------------------------|-------------------------|----------------------|-----------------------|
| Graduate Artificial Intelligence | Deep Learning Systems | Performance Modeling | Computer Networks |
| Stochastic Calculus | Probability & Computing | Game Theory | Programming Languages |