# TIN NGUYEN

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## WORK EXPERIENCE

**Quantbot Technologies, LP** — June 2024 - present
*Quantitative Researcher* — New York, NY
- Develop, deploy, and monitor systematic trading strategies.

**Massachusetts Institute of Technology** — August 2018 - May 2024
*Research Assistant* — Cambridge, MA
- Improved the runtime of Markov chain Monte Carlo algorithms for Bayesian clustering models without sacrificing accuracy.
- Derived fast and accurate approximations for Bayesian nonparametric models used in unsupervised learning.
- Detected influential data points whose omission significantly change the posterior distribution of Bayesian parametric models.

## INTERNSHIPS

**Quantbot Technologies, LP** — May 2023 - August 2023
*Intern* — New York, NY
- Prototyped a reinforcement-learning-based approach to dynamically switch between expert systems.
- Designed machine learning algorithms to measure feature importance and discover feature interactions.
- Showed through backtests that important features and feature interactions add value to existing trading strategies.

**IBM Research** — June 2019 - August 2019 & June 2022 - August 2022
*Research Intern* — Cambridge, MA
- Designed approximate leave-one-out cross-validation in hidden Markov models and conditional random fields.
- Reduced the runtime by 2 orders of magnitude, while giving highly accurate estimate of cross-validation error metric.
- Constructed hypothesis test to determine if a parametric specification contains the data-generating process.
- Applied test to features learned from multi-layer perceptron and convolutional neural networks.

## EDUCATION

**Massachusetts Institute of Technology** — August 2018 - May 2024
*Doctor of Philosophy in Electrical Engineering and Computer Science* — Cambridge, MA
- Thesis: Computational Methods and Sensitivity Detection for Bayesian Nonparametrics and Unsupervised Learning
- Completed en route Master's degree in June 2020
- Coursework: Bayesian Modeling and Inference, Automatic Speech Recognition

**Princeton University** — August 2014 - May 2018
*Bachelor of Science in Engineering in Operations Research and Financial Engineering* — Princeton, NJ
- Thesis: Novel results on computational methods for polynomial optimization.
- Coursework: Machine Learning and Pattern Recognition, Neural Networks: Theory and Applications.

## SKILLS

**Statistics** Generalized linear models, Bayesian inference, hypothesis testing, bootstrap, Markov chain Monte Carlo.
**Machine Learning** Tree-based models, neural networks, Gaussian processes, Bayesian nonparametrics, clustering, factor analysis.
**Operations Research** Linear programming, convex optimization, queuing theory, stochatic processes, Black-Scholes formula.
**Software** Python (scikit-learn, pandas, matplotlib, pytorch), R (ggplot2, lme4, stan, dplyr), slurm, sge, bash.
**Technical Communication** Peer-reviewed Publications, technical reports, conference posters, conference presentations.

## OTHER

**Fellowships** MIT EECS Great Educators Fellow (2018).
**Presentations** Oral presentation at 2022 Conference on Artificial Intelligence and Statistics (AISTATS) on "Many Processors, Little Time: MCMC for partitions via optimal transport couplings."
**Memberships** Inducted to Tau Beta Pi (2017).
**Theses** Proctor and Gamble Prize for best thesis in Operations Research (2018). Calvin Dodd McKracken Senior Thesis Award.