

RUJIAN CHEN

rjchen@mit.edu ◇ (857) 272-2574 ◇ Cambridge, MA ◇ [linkedin.com/in/rujian-chen](https://www.linkedin.com/in/rujian-chen) ◇ people.csail.mit.edu/rjchen

EDUCATION

Massachusetts Institute of Technology

PhD in Electrical Engineering and Computer Science. Minor: Mathematics. GPA: 5.0/5.0.

Aug 2023

Cambridge, MA

Research area: Bayesian inference and analysis; decision making; machine learning.

Cambridge University

BA and MEng in Electrical and Information Engineering (First Class Honours and Distinction).

2013

Cambridge, UK

SKILLS

Bayesian inference, graphical models, generative models, Markov chain Monte Carlo, variational inference, information theory, decision theory, optimization, nonparametric models, deep learning, computer vision, reinforcement learning

Python, Matlab, R, C++, pytorch, scikit-learn, pandas, slurm, git, latex, linux

WORK EXPERIENCE

Quantitative Research Intern, Citadel LLC

Chicago, IL, Jun – Aug 2019

- Developed a risk model for a new asset class to enable more reliable risk forecasts and improved PNL attribution.
- Developed production code of the new model and deployed into the firm's system.

Research Assistant, MIT CSAIL (Computer Science and Artificial Intelligence Laboratory) Sensing, Learning and Inference Group

Cambridge, MA, 2016 – 2023

- Worked with Sr. Scientist John Fisher on research at the interface of modern statistical and machine learning techniques, with applications to inference, optimization and decision making in science and engineering applications.

Research Assistant, MIT CSAIL Computational Genomics Group

Cambridge, MA, 2013 – 2016

- Worked with Prof. David Gifford on statistical and machine learning models for large-scale genomic data.

Teaching Assistant, MIT EECS 6.C51 (Modeling with Machine Learning) and 6.438 (Algorithms for Inference) 2019, 2023

- Developed and taught tutorials including variational autoencoders, reinforcement learning, recommender systems, causal inference, expectation maximization, graphical model inference, MCMC, particle and Kalman filtering.

STATISTICS & MACHINE LEARNING EXPERIENCE

Hyperparameter optimization for probabilistic latent variable models MIT EECS & CSAIL

2022 – 2023

- Developed a Langevin dynamics-based algorithm to optimize general high-dimensional models with state-of-the-art performance vs. related methods. • Proved convergence guarantees for the proposed dynamics.

Prediction guarantees for generalized Gaussian Process surrogate models MIT EECS & CSAIL

2021 – 2022

- Formulated a generalized Gaussian Process surrogate model framework. • Proved convergence guarantees for posterior predictions and distributions.

Uncertainty quantification and decision making for large-scale off-shore oil production systems MIT EECS & CSAIL, Collaboration with ExxonMobil Research

2016 – 2019

- Developed an embedded Gaussian Process model for learning uncertain physical models from data with $\sim 4\times$ better model fit. • Developed sparse kernel methods to accelerate model computation by $\sim 6\times$ with large datasets. • Designed a collapsed MCMC sampler for accelerated inference with $\sim 6\times$ dimensionality reduction. • Combined above model with information-theoretic decision making to reduce measurement costs by $\sim 25\%$.

Time-series office occupancy prediction with smart sensors MIT EECS & CSAIL with Philips Signify

2020 – 2021

- Designed a Bayesian model to simultaneously learn sensor profiles and predict office occupancy from coarse labels. Proposed a fast inference method leveraging problem structure to achieve linear-time inference in a combinatoric hypothesis space.

Classification algorithm for high-throughput genomic data MIT EECS & CSAIL

2014 – 2016

- Developed an unsupervised classification method for protein-DNA binding from large-scale genomic sequencing data (ENCODE), achieving higher accuracy over contemporary methods across multiple protein types.

Algorithmic poker strategy design MIT Pokerbot Competition

Jan 2014

- Designed an algorithmic strategy to compete with other teams; ranked top 5 among 30 teams in daily competitions.

Video-based drone control and exploration Cambridge University Signal Processing Lab

2012 – 2013

- Built a SLAM-based system to perform real-time quadcopter control and navigation using onboard video.

HONORS AND PUBLICATIONS

- MIT Presidential Fellowship
- Cambridge University Rex Moir Prize
- Publications: [http://people.csail.mit.edu/rjchen/#publications-talks](https://people.csail.mit.edu/rjchen/#publications-talks)