

Research Interests

Scalable optimization and sampling algorithms, dynamical systems, stochastic processes, Markov chain Monte Carlo, Bayesian inference, learning theory, applications.

Education

McGill University

M.Sc. Mathematics and Statistics

Montreal, QC

2019 - Present

+ Supervisor: Prof. David Stephens

+ Thesis Track

McGill University

B.Sc. Joint Honours Mathematics and Computer Science

Montreal, QC

2016 - 2019

+ GPA: 3.86/4.0.

+ First class Honours.

Projects

Scaling up MCMC using adaptive data subsampling.

Developed an adaptive importance sampling scheme for SAGA that further reduces the variance of the gradient and loss estimates and applied it to SGLD and subsampled Metropolis-Hastings.

PyTorch-VR.

<https://github.com/Aelhanchi/Pytorch-VR>

Implemented popular variance reduced optimization and sampling algorithms in PyTorch.

Statistical learning under a non-iid data generating process.

Studied learning guarantees using Rademacher complexity in non-stationary environments.

Detecting Alzheimer's disease based on MRI images of the brain

Built a 3D-CNN model for the detection of Alzheimer's disease from MRI images of the brain using the Alzheimer's Disease Neuroimaging Initiative (ADNI) dataset.

Awards

Science Undergraduate Research Award

Faculty of Science, McGill University

May 2018

Talks

Presentation at the McGill Artificial Intelligence Society

April 2019

Mathematics and Statistics Undergraduate Research Conference

September 2018