Mien Brabeeba Wang

brabeeba@mit.edu

EDUCATION

Massachusetts Institute of Technology Cambridge, MA
PhD in EECS Expected May 2024
- **Overall GPA:** 5.0/5.0.
- **Award:** Akamai Presidential Fellowship

Harvard University Cambridge, MA
Concentration in Math May 2018
- **Concentration GPA**: 4.0/4.0. **Overall GPA:** 3.85/4.0.
- **Activities**: Treasurer and Secretary in Eliot House Committee. Vice President in Anime Society and Go Club.

SELECTED MATH COURSEWORK

Topology/Geometry
- Math 231br Advanced Algebraic Topology; Math 233a Theory of Schemes I; Math 230br Advanced Differential Geometry; 18.917 Motivic Homotopy Theory

Analysis/Number Theory
- Math 212br Advanced Real Analysis; Math 213a Advanced Complex Analysis; Math 288 Probability Theory and Stochastic Process; Math 223b Algebraic Number Theory

RELATED PUBLICATION

Chi-Ning Chou, Mien Brabeeba Wang and Tiancheng Yu. A General Framework for Analyzing Stochastic Dynamics in Learning Algorithms. https://arxiv.org/abs/2006.06171
- Developed a streamlined three-step recipe with a general principle to analyze stochastic learning dynamics.
- Applied the framework to obtain the state of the art bounds on three different stochastic learning problems.

Chi-Ning Chou and Mien Brabeeba Wang. ODE-Inspired Analysis for the Biological Version of Oja's Rule in Solving Streaming PCA. COLT 2020. https://arxiv.org/abs/1911.02363
- Developed a novel method to analyze random dynamics using ideas from Ito calculus and dynamical system.
- Gave the first for-all-time convergence rate analysis of biological Oja's rule with the state of the art bound in solving streaming PCA.

Nancy Lynch and Mien Brabeeba Wang. Brief Announcement: Integrating Temporal Information to Spatial Information in a Neural Circuit. DISC 2019. https://arxiv.org/abs/1903.01217
- Defined biologically inspired toy problems to model how brain integrate information across temporal domain.
- Gave an algorithm and proved a matching lower bound on both the number of neurons and time to converge.

EXPERIENCE

Senior Thesis, Harvard Math Cambridge, MA
Singular Cochains as E Infinity Algebras January 2017 - April 2018
- Explored Mandell's p-adic homotopy theory and Eilenberg-Steerod like axioms for generalized cochain theory
- Explored a Hopkins-Miller theorem like spectral sequence to compute the homotopy group of mapping space of E infinity algebra from derivations of homotopy groups of E infinity algebra over Dyer-Lashof algebra

Kensho Technologies Cambridge, MA
Machine Learning Intern May 2017 - August 2017
- Designed a CNN that classifies companies into fine categories based on financial filing document.
- Built a CNN with attention for text summarization on financial filing document.
- Built a semisupervised CNN that embeds financial filing documents into vector for search engine.

Cox Lab, Harvard CS & MCB Cambridge, MA
Research Scientist September 2015 - December 2016
- Built a real time speaker/speech recognition model to identify the speaker's identity and transcribe speeches during a meeting. Used by Harvard Business School for meeting analytics.
- Designed and built generative models that generates natural human speech.
- Increased speed of convolutional neural net by implementing streaming support vector machines