Hao Li

Fourth-year PhD student majoring in Statistics 805-568-8423
Research focus on machine learning emulation, inverse problem and gaussian process. hao_li@ucsb.edu

EDUCATION

University of California, Santa Barbara, *Santa Barbara, CA* **Sep 2018 – May 2023**
Ph.D in Statistics

University of Minnesota-Twin Cities, *Minneapolis, MN* **May 2018**
Master of Financial Mathematics

NanKai University, *Tianjin, China* **July 2016**
Bachelor of Engineering in Electronics Science and Technology
Bachelor of Economics in Finance

RESEARCH EXPERIENCE

Inverse Problem on Force Field: Is it Possible to Design Stable Molecule from Unstable Samples? *Current*

- Built the model to search the ideal molecular structures given the desired functionality
- Applied it on real molecule such as H2CO and implemented the model in Python

Fast Force Field Emulation on Molecular Dynamics Simulations *Summer 2021*
(https://arxiv.org/abs/2108.06072)

- Developed the machine learning emulator with start of art accuracy that predicts the force fields of molecules
- Devised a novel structure to reduce the computation cost
- Implemented the model in Python & R and demonstrated the models' performance on real datasets.

A Probabilistic Roadmap between External Potential and Electron Densities *Summer 2020*

- Developed and implemented the model in R to emulate the electron densities using external potential.
- Derived the innovative way to reduce the computation cost of emulator

Numerical Gaussian Processes on Time Dependent Partial Differential Equations *Winter 2020*

- Solved the time dependent PDE with noise data on black-box initial conditions using gaussian processes.
- Implemented the method in R, and evaluated the performance on accuracy and uncertain quantification

TEACHING EXPERIENCE

- TA for Regression Analysis (PSTAT 126) Fall 2021
- TA for Probability and Statistics (PSTAT 120A 120B 120C) Fall/Spring/Winter 2020 & Spring 2019
- TA for Principles of Data Science with R (PSTAT 10A) Summer 2020
- TA for Statistics for Economics (PSTAT 109) Fall/Summer 2019 & Fall 2018
- TA for Statistics for Life Sciences (PSTAT 5LS) Winter 2019

INTERNSHIP & OTHER EXPERIENCE

Micai Inc (AI Investment firm) **Beijing, China**
Applied Quantitative Intern *Summer 2017*

- Researched optimization problems and risk control on investment portfolio products
- Created automated trading strategies with Monte Carlo method and evaluated the performance by back-testing

SKILLS

Coding languages:

- Advanced: Python, R, MATLAB, SQL
- Intermediate: C#, C++

Additional Skills: Auto CAD, Microcontroller, Excel, LATEX