Zunding Huang

Email: zuhuang@ucsd.edu Mobile: +1-858-241-4732

Education

- **University of California, San Diego, CA, June 2025 (Expected)**
  Doctor of Philosophy in Applied Mathematics; GPA: 3.87/4
- **University of Science and Technology of China, Anhui, June 2020**
  Bachelor of Science in Mathematics and Computer Science; GPA: 3.89/4.3

Skills

- Python, C/C++, MATLAB, Mathematica

Research/Work Experience

Research Assistant, Modeling and Simulation of Charged Molecules with Legendre-Transformed Poisson-Boltzmann Electrostatic Free Energy Functional Jan 2022 – Present
Advisor: Professor Bo Li
Department of Mathematics, University of California, San Diego

- Reformulated the problem of electrostatic interactions in charged molecules using the Legendre-transformed PB free energy functional, which is convex.
- Used an accurate finite-difference method to discretize the free energy functional and employed the limited-memory BFGS optimization method to numerically minimize the functional.
- Applied our theory and numerical methods to the variational implicit-solvent model for efficient calculations of molecular structures and free energy.

Research Assistant, MarketBERT: from news to their financial market impact Jan 2022 – Present
Department of Mathematics, University of California, San Diego

- Proposed marketBERT, a novel Transformer-based framework that recommends news with high impact on various financial market.
- Ranked the news from highest impact to lowest impact for each given market and the news that are relevant to it.

Research Assistant, Using Neural Network to Approximate Hierarchical Matrix with Low-rank Property Jun 2019 – Sept 2019
Advisor: Professor Hongkai Zhao, Postdoc Yimin Zhong
Department of Mathematics, University of California, Irvine

- Proposed a new type of tree-structure neural network–*Hnet (based on the property of Hierarchical Matrix)*, to attain a numerical approximation for a hierarchical matrix, achieving remarkable results with approximately 99 percent accuracy, compared to the true value in hierarchical matrix.
- Used *Hnet* to solve 2D EIT forward problems and *Hnet* took effect, which meant that *Hnet* could get a good approximation for practical problems.

Quant Intern, Yingyang Asset Management, Hefei, China Nov 2019 – Jan 2020

- Used machine learning, especially LSTM to predict the S&P 500 index in the first half year in 2019, which achieved high prediction accuracy.

Teaching Assistant Sept 2020 – Present
Department of Mathematics, University of California, San Diego

- Grade assignments and tests.
- Lead discussions and answer questions.

Projects

Recognize Blurry Image with Transfer Learning Mar 2022
Advisor: Professor Gary Cottrell
Computer Science & Engineering, University of California, San Diego

- Developed a deep learning model to restore blurry images to improve the performance of classification on blurry images.
- Trained the restoration model on a large dataset and applied transfer learning to restore blurry images on other datasets.

Other Activities

Team Member, CQA stock portfolio competition Sept 2021 – Jan 2022

Rady School of Management, University of California, San Diego

- Designed trading strategies for stock market; Wrote Python program based on linear regression to make trading decisions on buying or selling stocks.

Testimonial Award at the 2019 S.-T. Yau Mathematics Competition for College students Apr 2019

- Ranked 17th place out of 1129 competitors in Applied and Computational Mathematics track.