

# Zunding Huang

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## Education

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

## Skills

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

## Research/Work Experience

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### **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 find relationship between 9 index signals and S&P 500 index and then used the model to predict the following S&P 500 index in the first half of 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

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### **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

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### **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 mean reversion 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 17<sup>th</sup> place out of 1129 competitors in Applied and Computational Mathematics track.