Andrew Zheng

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Summary

- Formal coursework in computer science, mathematics, and physics
- Experience in Quantum Computing, Machine Learning and AI
- Experience in teaching in classroom and one-on-one settings

Education

University of Maryland | College Park, MD

M.S. in Computer Science — *Aug 2024 – Expected: May 2025*

B.S. in Computer Science and Mathematics — *Jan 2021 – May 2024*

Skill Highlights

Programming Languages: Python, Java, C, Bash, Vim
Computer Science: Quantum Computing, Deep Learning, Computer Vision
Mathematics: PDEs, Topology, Linear Algebra
Software: Pandas, Numpy, Pytorch

Research and Publications

Quantum Computing | *Quantum Computing, Algorithms* — Jan 2024 – Current

- Motivated by previous work on Commutator Scaling of Lie-Trotter Formula
- Created and implemented new data structures and algorithms for simulating fermi-hubbard model (user guide and code given upon request)
- Explored new methods for computing error bounds in data using algebraic structure

2D Image Generation | *Computer Vision, Python, Machine Learning* — Jan 2022 - May 2022

- Researched methods concerning generating 2D frames accurately
- Used Implicit Neural Representations to train a model that accurately fitted an image

Binning Techniques for Solar Wind and Geomagnetic Data | *Machine Learning, Poster Presentation* Dec 2018

- Presented a poster during the AGU conference held on December 12th, 2018 in Washington, D.C. titled "SM31D-3525 Effects of Data Binning Techniques on Results of Analyzing Solar Wind and Geomagnetic Indices Data" [Link]

Work Experience

REU Intern | University of Maryland, College Park — May 2024 – August 2024

Quantum Computing

- Created and implemented efficient algorithms for computing the trotter error of time-evolution of fermi-hubbard model

ITS Intern | AARP Washington DC Headquarters — May 2023 – August 2023

Generative AI

- Led innovation for chat bot prototype creation
- Used pandas to conduct data analysis to create direction for project
- Utilized understanding in numerical methods to create multiple chat bot prototypes

Teaching Assistant | University of Maryland, College Park, MD — Jan 2023 – May 2023

CMSC 250: Discrete Structures

- Led a discussion section that went over course material
- Office hours and grading duties
- Created original discussion slides to complement lecture material [Link]

Coursework

Completed: ; Capstone in Machine Learning (CMSC673); Advanced Numerical Optimization (CMSC764); Foundations of Deep Learning (CMSC720); Introduction to Compilers (CMSC430); Introduction to Machine Learning (CMSC422); Computer Vision (CMSC426); PDE's (MATH462); Transform Methods (MATH464); Advanced Calculus II (MATH411); Advanced Linear Algebra (MATH405); Computational Methods (AMSC460); Complex Analysis (MATH463); Abstract Algebra (MATH403); Number Theory (MATH406); Introduction to Quantum Computing(CMSC457) Special Topics in Computer Science; Quantum Boot Camp (CMSC488A); Advanced Data Structures (CMSC420); Algorithms (CMSC351); Introduction to Data Science (CMSC320); Applied Probability and Statistics I (STAT400)
In Progress: Introduction to Quantum Information Processing (CMSC657); Advanced Computer Graphics (MATH740); Abstract Algebra I (MATH600); Introduction to Topology (MATH432)