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)

Other Experiences

Chess

- Scholastic Maryland State Champion | 2014 - 2017, 2020
- Chess.com: bravehorse
- Represented UMD Chess Team in Pan American Chess Championships| 2021, 2022
- Community Service: Hosted public lessons at local community college, Private tutor

Ice Hockey

- Maryland Student Hockey League (MSHL) scholarship | 2020
- Last Team: Washington Little Caps AAA U18 | 2019 – 2020
- Howard County All-Star 2016-2020, MSHL all-state | 2018 – 2020
- Community Service: Skated with many disabled players, Instructor for Asian Ice Hockey Camp