Ansh Sharma

609-375-5451 | anshgs2@illinois.edu | linkedin.com/in/anshgs | anshgs.me | github.com/anshgs

Education

University of Illinois at Urbana-Champaign Expected May 2024
B.S. in Computer Science, Minor in Mathematics, Chancellor's Scholar *Champaign, IL*

Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Discrete Structures, Combinatorics, Multivariable Calculus, Machine Learning, Real Analysis, Quantum Computing

Skills & Awards

Languages: Java, Python, C++, JavaScript, LaTeX, HTML/CSS, SQL

Frameworks: Node.js, Express, Bootstrap, Sass, Catch2, Django

Developer Tools: Git, VS Code, Eclipse, Jupyter Notebook, Linux Shell

Libraries: PyTorch, scikit-learn, Pandas, NumPy, MatPlotLib, OpenCV, Qiskit, Discord.js

Olympiad Awards: USA Junior Math Olympiad Qualifier(2019), USA Computing Olympiad Gold Division(2019), USA Physics Olympiad Top 50(2021), Science Olympiad National Tournament - 1st Place Machines, 6th Place Circuit Lab(2021)

Research Awards: Regeneron International Science and Engineering Fair US Air Force Research Laboratory Special Award - Systems Software 1st Place(2021), (ISEF)The King Abdulaziz Foundation for Giftedness and Creativity Special Award(2021), North Jersey Regional Science Fair 1st Place Computer Science(2021), Nokia Bell Labs Distinguished Research Award(2021)

Activities & Experience

NeuroTech@UIUC Aug. 2021 – Present
Software Developer *Champaign, IL*
- Designed code in Python for an RC Car that can be controlled through facial movements
- Built various machine learning models to identify instructions based on readings from a brain computer interface(EEG)
- Utilized PyTorch/scikit-learn to train/test various models including LSTMs, SVMs, Random Forests, and Neural Networks

NJ Governor's School in the Sciences July 2020 – Aug. 2020
Quantum Computing Researcher *Madison, NJ*
- Explored topics in quantum computing including quantum optimization algorithms, quantum error correction, and VQE
- Designed a probabilistic oracle for Grover's algorithm to solve a partitioning problem for final project
- Took additional courses on Special Relativity, Geometric Constructions, Molecular Biology of Cancer, and The Big Bang

West Windsor-Plainsboro Math Expo Sept. 2017 – July 2021
Lead Director *West Windsor, NJ*
- WWPME is an annual full-day math event with around 500 students in grades 3-8 attending each year from NJ, NY, and PA
- Raised and donated thousands of dollars in profit to math education in the Trenton public school system
- As Lead Director, responsible for problem writing, publicity, finances, sponsors, and managing 60 high school volunteers

Selected Projects

Passport Photo Generator | *Python, OpenCV, Node.js, JavaScript, Express, HTML* Aug. 2021 – Sept. 2021
- Built a locally hosted website to convert an inputted image into a passport photo satisfying U.S. passport requirements
- Implemented face detection, image rotation, centering, and alignment using OpenCV
- Incorporated the U^2-net deep learning architecture for salient object detection to remove background

Waitlist-Bot | *Node.js, discord.js, JavaScript* Aug. 2021 – Sept. 2021
- Designed a discord bot to assist with the waitlist process for courses at UIUC using Node.js and the discord.js module
- Allows users to input the course they plan to drop given admission to their desired course to construct a directed multigraph
- Utilizes a DFS to detect cycles and notify all involved users once found, enabling them to register for their desired courses
- Functions includes adding/removing edges, querying a cycle containing a specific edge, and removing users from the database

Improved Quantum Cryptography with Entanglement & Signatures | *Python, Qiskit* Aug. 2020 – March 2021
- Presented at the 2021 Regeneron International Science and Engineering Fair and the North Jersey Regional Science Fair
- Designed a modification of the BB84 QKD Algorithm to improve on qubit efficiency and prevent man-in-the-middle attacks
- Implemented and tested the algorithm using the Qiskit library to run algorithm on IBM cloud quantum computers
- Algorithm demonstrated a 20% efficiency increase through setting up an entanglement scheme prior to BB84
- Designed and implemented a parallel quantum digital signature scheme to prevent man-in-the-middle attacks as well