

Ansh Sharma

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EDUCATION

University of Illinois at Urbana-Champaign, GPA: 4.0/4.0

B.S. in Computer Science, Minor in Mathematics, Chancellor's Scholar

Expected May 2024

Champaign, IL

WORK EXPERIENCE

Amazon

Software Development Engineer Intern

May 2022 - Present

Seattle, Wa

AbbVie

Machine Learning Intern

Jan. 2022 – May 2022

Chicago, IL

- Transfer learned a 3D U-NET deep learning model to segment kidneys from MRI scans for tracking PKD in 63 mice
- Utilized multiomic data to create an imaging biomarker for predicting treatment response and cluster mice into two groups
- Used Gene Ontology on SSGEA differences between groups to suggest potential pathways to explain a proprietary treatment

Molecule Maker Lab Institute

Undergraduate Research Assistant

Dec. 2021 – May 2022

Champaign, IL

- Used language models for biomedical entity relationship extraction to mine reaction information from 500 research papers
- Worked with computer vision models to detect and extract structural diagrams and convert into SMILES representations

NJ Governor's School in the Sciences

Quantum Computing Researcher

July 2020 – Aug. 2020

Madison, NJ

- Published a research paper on the Qiskit quantum computing framework's ability to execute various quantum algorithms.
- Tested the frameworks accuracy with molecular simulation using the Variational Quantum Eigensolver algorithm
- Designed an original probabilistic oracle to pair with Grover's algorithm in order to optimize solving a partitioning problem

ACTIVITIES & HONORS

NeuroTech@UIUC

Software Developer

Aug. 2021 – Present

Champaign, IL

- Collected data and implemented ML models to control an RC Car using through readings from a brain computer interface
- Reached 87% live accuracy in classifying facial expressions as instructions using engineered features from the EEG data

Olympiad Awards: Putnam Top 500 - Winter 2020, USA Math Olympiad (USAJMO) Qualifier - Spring 2019, USA Computing Olympiad (USACO) Gold Division - Spring 2019, USA Physics Olympiad (USAPhO) Top 50 - Spring 2021

Research Awards: Regeneron International Science and Engineering Fair Finalist (2021), North Jersey Regional Science Fair 1st Place Computer Science (2021), Nokia Bell Labs Distinguished Research Award (2021)

SELECTED PROJECTS

🔗 **Style Share** | *React/Redux, three.js, Tensorflow.js, Flask, Firebase Firestore*

- A website that allows users to generate 3D scenes and stylize them according to the style of another image using ML
- Used quantization and distillation to reduce TF.js model size and improve speed by 4x while running within browser
- Included authentication with Google OAuth and a gallery to upload and share photos using a cloud storage bucket

🔗 **Infected & Detected** | *TFLite, OpenCV, Flask, MongoDB*

- **HackIllinois 2022: Best Community & Sustainability Track Project**
- An ML based edge computing tool to help farmers get analytics on their crop health and invasive weed growth over time
- Trained an image classifier using transfer learning on MobileNetV2 to identify different types of plant diseases and weeds
- Used pruning and quantization to shrink model size further by 10x to run quickly on a Raspberry Pi with a Coral Edge TPU

🔗 **Improved Quantum Cryptography with Entanglement & Signatures** | *Python, Qiskit*

- 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

TECHNICAL SKILLS

Proficient: Java, Python, C++, LaTeX, SQL, Linux Shell, Git, Pytorch, Pandas, Numpy, Matplotlib, OpenCV, Qiskit

Familiar: JavaScript, HTML/CSS, Node.js, Express, Bootstrap, Sass, Catch2, Flask, OpenGL, Tensorflow, Keras