AHMAD SHAHZAD CHOUDHARY

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EDUCATION

DUKE UNIVERSITY — *Durham, NC*

B.S. in Computer Science & Finance (Concentration in AI/ML)

Relevant Coursework: Data Structures & Algorithms, Design & Analysis of Algorithms, Computer Architecture, Discrete Mathematics, Proof-Based Linear Algebra, Advanced Multivariable Calculus, Probability, Elements of Machine Learning, Databases

EXPERIENCE

KOTWAL RESEARCH LABS (DARK MATTER PARTICLE PHYSICS) — *Durham, NC*

Research Assistant — *Sep 2023 – Present*

- Learning unsupervised AI integration to train models to accurately predict decaying particle's paths and movements.
- Coding in **C/C++** to convert code into physical microchips while maintaining efficiency in runtime and costs for the optimal production.

CENTER FOR VIRTUAL IMAGING TRIALS — *Durham, NC*

Research Assistant — *Nov 2023 – Present*

- Collaborated with an interdisciplinary team to integrate **FEBio** tool into research workflow, streamlining model creation process and reducing production time by 30%.
- Implemented advanced **C++** and **Python** scripting techniques to create realistic lung models for simulation, improving accuracy compared to previous models.

TECHNOLOGY STUDENT ASSOCIATION — *Oklahoma City, OK*

Chapter President — *Aug 2018 – May 2023*

- Utilized cloud hosting on **AWS** and developed the front end using **React-Native** and **JS** to ensure seamless scalability and high performance for the application, resulting in a 65% uptime and improved user experience.
- Researched and developed a renewable energy-based design system for transporting food into space, resulting in a 40% reduction in energy consumption and increasing efficiency by 30% compared to current published methods.
- Developed **CAD** models using **AutoDesk Inventor** and graphic designing software (Adobe Suite, DaVinci Resolve).

FIRST ROBOTICS — *Oklahoma City, OK*

Lead Programmer & Engineer — *Aug 2021 – May 2023*

- Implemented **OpenCV** interface that utilized the Raspberry Pi to accurately measure image-to-camera distance up to half an inch, resulting in improved precision and accuracy in blob detection.
- Programmed complex arm movements and hanging motions of a robot and fabricated a shooting system, resulting in successful execution of tasks during national competition and gaining state-wide press.

PROJECTS

ML/AI Robotics Match Prediction — *Cary, NC*

Personal Project — *Feb 2024 – Mar 2024*

- Utilizing the Statbotics API to predict matches with around a 85% success rate and alliance selections for FIRST Robotics.
- With assistance from **Scikit-Learn,** coded cross validation (feature importance) by way of Random Forest Classifiers. In addition, ran a binary classification to train the data on accuracy.

Retrograde: Space Exploration Website — *Oklahoma City, OK*

Technology Student Association — *Dec 2022 – Apr 2023*

- Employed **HTML**, **CSS**, and **JavaScript** to create dynamic backend data storage functionality for the website, improving load times by 35% and reducing server costs by 15%
- Developed and executed a comprehensive training program for team members on **Github** (desktop and website), **AWS**, **Svelte**, resulting in a 30% increase in productivity

ACHIEVEMENTS

Finalist in ASA DataFest; Duke Statistics and Mathematics Department — *Mar 2024*
Qualified from 3,300 teams – International Finalist; FIRST Robotics Worlds Competition — *Apr 2023*
Top 10 / 250,000+ participants; Technology Student Association's National Webmaster Cup — *Jul 2022*
International Semi-Finalist from 300+ teams; StellarXplorers Association Competition — *Apr 2022*
Honorable Mention in Math Modeling; Duke Mathematics Department — *Nov 2023*

SKILLS

Coding & Modelling: Python (Matplotlib, Tensorflow), Java, JavaScript (Svelte, React, Node.js), C++, C, C#, SQL, AWS, CAD