Ahmad Shahzad Choudhary

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EDUCATION

DUKE UNIVERSITY *Durham, NC*

B.S. in Computer Science, Physics & Finance Expected 2026

Relevant Courses: Data Structures & Algorithms, Machine Learning, Computer Architecture, Multivariable Calculus, Linear Algebra

EXPERIENCE

RESEARCH ASSISTANT- Kotwal Research Labs (Dark Matter Particle Discovery Research) *Sep 2023 – Sep 2024*

- Developed and trained **unsupervised AI** models that achieved a **90%+ accuracy rate** in predicting decaying particle paths and movements, increasing simulation reliability and research productivity
- Converted algorithms into microchip-compatible code through Verilog, reducing runtime significantly and cutting **production costs by 35%**, supporting a **20% faster** production pipeline

RESEARCH ASSISTANT - Center For Virtual Imaging Trials *Nov 2023 – Jun 2024*

- Developed realistic lung models using C++ and Python scripting techniques, achieving a **40%** improvement in simulation accuracy over previous models, which increased the reliability of respiratory research findings
- Collaborated with an interdisciplinary team to incorporate the **FEBio tool** into the research workflow, cutting model **creation time by 32%** and enhancing overall project efficiency

PRESIDENT/SOFTWARE ENGINEER - Technology Student Association *Aug 2018 – May 2023*

- Utilized **AWS RDS** and developed the front end with **React** and **JavaScript**, achieving **65% greater uptime** and enhancing scalability to deliver a seamless user experience
- Researched and developed a renewable energy-powered system for transporting food into space, reducing **energy usage by 40%** and increasing efficiency by **20%** compared to existing published methods, advancing sustainable space logistics
- Developed CAD models using Autodesk Inventor and designed visuals using Adobe Suite and DaVinci Resolve, producing detailed prototypes and presentation materials that enhanced communication among **100+ members**

SOFTWARE INTERN - Nustian USA Non-Profit *Jul 2021 – Mar 2023*

- Utilized **WordPress** and backend cost management tools to implement features like fireside chats and student grouping functions, connecting students with industry professionals and fostering community, resulting in a **25%** improvement in user interaction
- Supported fundraising strategies and designed visual content using **Adobe Suite**, contributing to successful outreach campaigns that achieved over **$80,000** in donations

PROJECTS

ML/AI Robotics Match Prediction | *API, Cross-Validation, Random Forest Classifier, Python* *Feb 2024 – Mar 2024*

- Leveraged Stat-botics API data to achieve an **85% success rate** in predicting outcomes for **6,000** matches across **2,500** teams
- Employed **Angular** for seamless front-end functionality and **Node.js** for backend API management
- Coded cross-validation for feature importance with Random Forest Classifiers and ran binary classification models, boosting data training accuracy by **20%** and refining prediction reliability for competition scenarios

Stock Investment Portfolio | *Svelte, JS, Flask API, TypeScript, openDB, Vercel, Tailwind* *Jun 2024 – Present*

- Developed the front end using **Svelte** with **CSS**, **HTML**, and JavaScript for responsive design, creating a seamless user interface; integrated **TypeScript** to streamline code management and boost project scalability
- Implemented a robust back-end using **Flask API** and Python scripts to handle real-time stock data processing, providing accurate and timely investment insights Working on hosting the platform for broader accessibility to **100+ Duke Finance Graduate students**

Tailor-Made File Navigator | *C++, Qt Widget, Linux/Windows, OS, Github* *Aug 2024– Oct 2024*

- Implemented options for user-defined key bindings and personalized settings, offering a **20% faster** navigation experience and fixing common responsiveness issues, providing a tailored and intuitive file management tool
- Developed a cross-platform GUI compatible with Linux and Windows, utilizing the **C++** filesystem library and **Qt Widgets** to create a more efficient file explorer with enhanced responsiveness and reliability

MonPoke Champions Video Game | *PostgreSQL, Flask framework, Docker, Unity, HTML5, AWS, Kubernetes* *Oct 2024 – Present*

- Built a game from scratch with a focus on **PostgreSQL** database management and Flask API, reducing data **retrieval time** by **40%** and minimizing I/O costs. Employed **Kubernetes** for user scalability and smoothness.
- Deployed the game server using **Docker** for efficient environment management and collaborated with **Unity/C#** for game logic, enhancing server reliability and ensuring consistent performance across platforms

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*

SKILLS

Languages: Java, Python, C, C++, JavaScript, TypeScript, Bash, HTML/CSS, SQL, MIPS Assembly, Kotlin, C#, XML
Frameworks: Svelte, React, Node js, Angular, PyTorch, Flask, FastAPI, React-Native, WordPress, TensorFlow
Tools: Matplotlib, AWS, CAD, PostgreSQL, Docker, Vercel, Tailwind, Scikit Learn, Qiskit, Qt Widget, GitHub, Verilog, FEBio, MongoDB, Kubernetes