

# Hassan Rizwan

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## EDUCATION

**University of Pennsylvania** | School of Engineering and Applied Sciences | Philadelphia, PA

Aug 2021 – May 2025

*Candidate for Accelerated Master of Science in Engineering*

*Major:* Computer Science | *Minor:* Math

*Relevant Coursework:* Artificial Intelligence, Big Data Analytics, Machine Learning, Operating Systems, Cloud Computing, Compilers & Interpreters Data Structures & Algorithms, Embedded Systems & Microcontrollers, Computer Architecture, Databases for Analytics

## PROFESSIONAL EXPERIENCE

**Systematic Research Advisors, Financial Data Science Intern** | Brooklyn, NY

May 2023 – Nov 2023

- Built a robust data pipeline, using Yahoo Finance API to scrape data and seamlessly integrating Azure Functions scheduler. Collected data was stored in a MySQL database for streamlined access and analysis.
- Developed a probability model using Pandas, Numpy, SQLAlchemy, and Scipy for statistical analysis, leveraging options expiration data and strike price contributing to valuable insights regarding investment opportunities.

**University of Pennsylvania, Research Volunteer** | Philadelphia, PA

Sept 2022 – Aug 2023

- Collaborated with Penn Medicine and Penn Radiology to build an AI to detect potential stress fractures in the hip area.
- Developed and implemented CNN using TensorFlow to analyze dicom files with 84% accuracy.

**Long Island University, Lab Researcher** | Brooklyn, NY

Sept 2019 – Mar 2020

- Researched and synthesized organosilicons and hydrazones for anti-diabetic and anti-cancer pharmaceuticals.
- Operated million-dollar R&D and manufacturing assets while extracting compounds with flash and thin layer chromatography and identifying candidates for further examination with NMR spectroscopy.

## LEADERSHIP & OTHER EXPERIENCE

**Penn Architechs, Founding Board** | Philadelphia, PA

Feb 2022 – Present

- Helped relaunch Architechs to foster Penn's EE and CS community, working with admin to reopen makerspace post-COVID.
- Worked with board, alumni, clubs, and professors to market and fund opportunities including career panels and workshops.
- Hosted the PennApps Hackathon with 1500 participants as an Architechs representative, providing hackers with hardware.

## PROJECTS

**AutoAvenue (MySQL, React, NodeJS)**

Mar 2024 – May 2024

- Developed a car review and search platform featuring detailed searches and rankings by price, year, and efficiency.
- Engineered the MySQL backend for complex queries, enhancing engagement by facilitating smart vehicle discoveries.

**PennOS (C, Systems)**

Oct 2023 – Dec 2023

- Designed and implemented a UNIX-like operating system, with robust support for system calls and integrated shell built-ins.
- Created a custom FAT for file organization and round-robin scheduler for efficient process management.

**Flights Delays and Cancellations (Python, Pandas, PyTorch)**

Nov 2023 – Dec 2023

- Built a predictive algorithm for flight delays/cancellations using Random Forests, Neural Networks, and Logistic Regression.

**Theramin (Embedded C, ATmega328P)**

Feb 2023 – Mar 2023

- Created a digital theremin by using an ADC, offering continuous and discrete modes by using pulse-width modulation.

**Pong (Embedded C, C++, Blynk)**

Apr 2023

- Developed the classic game of Pong using a TFT LCD module and joystick control through bare metal C.
- Integrated wireless control using the NodeMCU board and Blynk platform, enabling remote control of player paddles.

**Senator Tweet Statistics (SQL)**

Apr 2023

- Extracted U.S. Senators' tweets and stored them in an Azure SQL Database by utilizing web scraping techniques.
- Conducted statistical analysis to determine average tweets per day by party, offering insights into the political discourse.

## SKILLS & INTERESTS

*Technical:* Java, C, C++, Python, OCaml, SQL, MongoDB, Neo4j, PyTorch, TensorFlow, Machine Learning, Artificial Intelligence, Cloud Computing, AWS, Linux, Computer Vision, Networks, Systems Programming, Compilers, Computer Architecture and Design

*Other Languages:* Urdu (Business Proficient)