Hassan Rizwan

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EDUCATION

University of Pennsylvania | GPA: 3.59/4.00 — Philadelphia, PA
B.S.E. in Computer Science | Minor in Mathematics — May 2025
M.S.E. in Computer Science — Dec 2025
Relevant Coursework: Distributed Systems, Compilers & Interpreters, Operating Systems, Artificial Intelligence, Big Data Analytics, Machine Learning, Embedded Systems, Database Systems, Cloud Computing, Data Structures & Algorithms, Probability

EXPERIENCE

Amazon.com, Inc | Software Developer Engineer Intern, Fixed Marketing Measurement — Jun 2025 – Present
- Designed and implemented a scalable outlier detection system using PySpark and TypeScript, optimizing backend data preprocessing and cutting model runtimes from 1+ days to ~4 hours in Amazon's marketing measurement pipelines.
- Integrated into a distributed MLOps architecture with SageMaker, improving reliability, reducing reruns, and accelerating model deployment for Amazon economists.

University of Pennsylvania | Graduate Teaching Assistant, CIS 5450: Big Data Analytics — Aug 2024 – Present
- Curated assignments, hosted office hours, led recitations, and graded exams to teach data science skills to 300+ students.
- Guided eighteen students through all stages of machine learning projects, from data acquisition to deployment.

University of Pennsylvania | Graduate Teaching Assistant, CIT 5950: Computer Systems Programming — Dec 2024 – Present
- Developed and graded C++ assignments on threading, synchronization, virtual memory, and network communication.
- Led recitations and office hours for 250+ students, providing hands-on guidance in operating systems.

Penn Medicine, Physics and Instrumentation Group | Deep Learning Intern — Jun 2024 – Aug 2024
- Enhanced Breast-PET scanner image reconstruction using a U-Net to address deformations from limited-angle data.
- Developed and implemented deep learning algorithms to reduce reconstruction artifacts and noise, training models on simulated and real phantom data to optimize clinical image quality and diagnostic accuracy.

Systematic Research Advisors, LLC | Financial Data Science Intern — May 2023 – Nov 2023
- Built a robust ETL data pipeline, utilizing Yahoo Finance API for structured retrieval, integrated Azure Functions for automation.
- Designed and managed a MySQL database for streamlined data access, and developed a probability model using Pandas, NumPy, SQLAlchemy, and SciPy to derive insights, enhancing investment research.

PROJECTS

Penn Cloud | C++, Socket API — Nov 2024 – Dec 2024
- Engineered a cloud-based system offering services like file storage, mail, and admin functions (e.g., Google Drive, Gmail).
- Designed load-balanced frontend servers using HTTP 1.1, with request handlers connecting to fault tolerant, replicated, and distributed backend key-value stores (e.g., BigTable).

Oat Compiler | OCaml, Mehnir — Mar 2024 – May 2024
- Built a compiler for OAT, a simplified C-like language, to LLVM and x86 using OCamllex and Mehnir for parsing.
- Implemented type-checking for structs, function pointers, along with compiler optimizations for performance boosts.

AutoAvenue | MySQL, React, Node — Mar 2024 – May 2024
- Created a full-stack car review and search platform for users to compare ratings and prices from a database of 600,000+ cars.
- Optimized SQL queries for a dynamic car ranking system, cutting response times by 97%, from 30+ seconds to <1 second.

PennOS | C, Linux — 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 management and a round-robin scheduler for efficient process handling.

SKILLS

Languages: C/C++, Python, Java, SQL, OCaml, JavaScript, LLVM IR, x86, RISC-V
Other: PyTorch, Pandas, NumPy, Scikit-Learn, Spark, Dask, MongoDB, Neo4j, Node.js, React.js, Git, AWS, Azure, DevOps, Docker