Aaquib Syed

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Education

University of Maryland Aug 2022 – May 2026
Bachelor of Science in Computer Science and Mathematics *College Park, MD*

- Banneker/Key Merit Scholar (Given to top 0.5% of incoming class)
- USA Computing Olympiad Platinum Winner
- Kaggle RSNA Covid-19 Detection Challenge Silver Medalist (Top 5% of submissions)
- GPA: 4.0

Technical Skills

Languages: Python, Java, C++, C#, C, HTML/CSS, JavaScript
Frameworks/Libraries: PyTorch, Tensorflow, Keras, Pandas, NumPy, SciPy, Scikit-Learn, SQL, Bash, Linux, Django, Flutter, Xamarin, React
Coursework: Object-oriented Programming, Computer Systems, Data Structures and Algorithms, Intro to Data Science, Cybersecurity, Probability Theory, Multi-Variable Calculus, Linear Algebra, Differential Equations

Work Experience

Anthropic *(Contracting Role)* | *Python* Jan 2025 – Present
Research Engineer *Remote*

- Alignment sciences team under Jan Leike; developing capabilities evaluations in research tasks.

Google | *C++, Python, SQL* May 2024 - Aug 2024
Software Engineer Intern *Mountain View, CA*

- Implemented an LLM agent for AdsML model optimizations using **3000+** historical experiments.
- Engineered a distributed solution to process experiment requests from **40+** teams.
- Utilized the agent to run successful experiments optimizing AI models for performance and efficiency.

Stanford Existential Risks Initiative | *Python* | *Program Link*| *Paper Link* Jan 2024 - Mar 2024
Research Intern | *Advisor: Neel Nanda (Research Lead @ Google DeepMind)* *Berkeley, CA*

- **1 of 60 admits** to ML Alignment and Theory Scholars, a 14 week AI interpretability research program.
- Discovered **a novel causal pathway** in LLMs responsible for detecting and refusing harmful requests.
- Research accepted at **NeurIPS 2024**.

Alignment Research Engineer Accelerator *Python, JAX* | *Paper Link* Jun 2023 - Jul 2023
Research Intern | *Advisor: Arthur Conmy (Research Engineer @ Google DeepMind)* *London, UK*

- **1 of 25 admits** to ARENA, a 6-week program on upskilling future AI researchers.
- Achieved a **100x speedup** (8 min vs 4.2s) on **component attribution** using Taylor series approximations.
- Published work as a first-author paper at **NeurIPS 2023 (ATTRIB workshop)** and **EMNLP 2024**.

Jane Street | *OCaml* May 2023 - May 2023
SEE Program Participant *New York, NY*

- **1 of 40 admits** to SEE, a program focused on teaching probability, market structure, and arbitrage.

Capital One | *Python, PyTorch, SQL, Snowflake* Jan 2023 - Apr 2023
Machine Learning Engineer Intern *McLean, VA*

- Implemented an **AI-powered risk management system** that generates **$12M in annual cost savings**.
- Developed a neural news recommendation model processing **1M+ news articles a day** for **1k+ risk associates**.
- Created functionality for easy model evaluation using **8 metrics** and achieved **group AUC = 0.92**.

Research Publications and Presentations

*Guo, P.; ***Syed A.**; Sheshadri, A.; Ewart, A.; and Dziugaite, K. "Mechanistic Unlearning: Robust Knowledge Unlearning and Editing via Mechanistic Localization" *ICML* 2025. (Spotlight – Top 2.6%)

*Arditi, A.; *Obseso, O.; **Syed A.**; Paleka, D.; Panickssery, N.; Gurnee, W.; and Nanda, N. "Refusal in language models is mediated by a single direction" *NeurIPS* 2024.

Syed A.; Rager, C.; and Conmy, A. "Attribution Patching Outperforms Automated Circuit Discovery" BlackboxNLP, *EMNLP* 2024

Syed A.; Guo, P.; and Sundarapandiyan, V. "Prune and Tune: Improving Efficient Pruning Techniques for Massive Language Models" *Tiny Papers @ ICLR 2023*. (Notable – Top 6%)

Syed A.; Ren, T.; Adam, R.; Lu, J; Maldjian, T.; Duong, T. "Machine Learning with Textural Analysis of Longitudinal Multiparametric MRI and Molecular Subtypes Accurately Predicts Pathologic Complete Response in Patients with Invasive Breast Cancer." *PLOS ONE.* 2023.

Awards & Honors

Banneker-Key Merit Scholarship
University of Maryland, given to top 0.5% of incoming class. *2022 – 2026*

USACO Platinum Medal
USA Computing Olympiad, given to top 2% of competitive programmers. *2022*

Kaggle RSNA Covid-19 Detection Challenge Silver Medalist
Top 5% of submissions *2021*

Projects

C++ Transformer Implementation | **C++, CMake** | **GitHub Link**

- Developed a custom **Transformer** model using the **PyTorch C++ SDK** based on the **Pythia** architecture.
- Implemented **Rotary Positional Embeddings (RoPE)**, the **current SOTA** for long range text dependencies.
- Optimized performance with **Key-Value (KV) caching**, significantly reducing attention calculation overhead.

Java Algorithmic Trading Platform | **Java, Bazel, JUnit** | **GitHub Link**

- Implemented a real-time high-performance trading platform using Java integrating with the Alpaca API.
- Established **WebSocket** communication with concurrency and multithreading to stream live stock and crypto data.
- Utilized **Bazel** as a build tool and **JUnit** for unit testing important components.

Brisbane: Talk to Your Data | **Python, JavaScript** | **GitHub Link**

- Created a desktop app with a chat interface allowing users to query local files with a **GPT 3.5 backend**.
- Used **Electron.js** for the web app, **vanilla JavaScript** for frontend, and **Flask (Python)** for the backend.
- Used **LangChain** to parse and create embeddings for local files.

Personal Distance Monitor | **C++, Python, Arduino** | **GitHub Link**

- Received a **$10,000 grant** from the Lemelson-MIT foundation to create a device that aids social distancing amongst students with autism spectrum disorder (ASD) during the height of the pandemic.
- Designed an **Arduino-based tool** to alert users based on proximity using a **multiple linear regression**.
- Presented work to over 200 members across New York and interviewed with **ABC News and PBS News**.