

Aydan Pirani

✉ aydanpirani@gmail.com ☎ (669) 231-9639 in aydanpirani 🌐 AydanPirani 📍 aydanpirani.web.illinois.edu

EDUCATION

Masters' in Computer Science, University of Illinois at Urbana-Champaign May 2025 (est.)

B.S. in Computer Science (Systems/Networking/Security), University of Illinois at Urbana-Champaign May 2024 (est.)

- **GPA:** 3.87/4.0
- **Completed Courses:** Distributed Systems, Cloud Storage Systems, Networks, Parallel Programming, Security, Operating Systems, System Programming, Data Structures, Algorithms, Database Systems, AI, Software Design, Computer Arch.

EXPERIENCE

Software Engineering Intern, Microsoft (Azure Networking) May 2023 – Aug 2023

- Redesigned internal device acceptance service (running on 25 clusters and serving 1500+ network devices) by implementing Blob cache and converting service from stateless to stateful, reducing supplemental APIs workload by 91%.
- Developed internal-facing Blob Storage handler, resulting in improved file processing and enhanced developer experience.
- Wrote automated unit tests to achieve 100% coverage, enabling detection (and fixes) of repressed bugs within codebase.

Software Engineering Intern, Microsoft (Azure Cloud Security) May 2022 – Aug 2022

- Improved fraud detector performance by ~5% by building and deploying an end-to-end Azure Data Factory pipeline.
- Implemented data ingestion scripts in U-SQL to periodically generate features for machine learning models.
- Enhanced functionality of internal fraud detection tools to display more fraud metrics, providing stronger fraud evidences.

RESEARCH

Distributed Protocols Research Group, UIUC (Advised by Dr. Indranil Gupta) Aug 2022 – Apr 2023

- Designed fault-tolerant distributed ML training platforms for model and data parallelism across GPUs, minimizing training time for transformer-like deep learning models.
- Enhanced functionality of internal memory allocators to analyze advantages of custom-placed operators (step time and memory), as opposed to Tensorflow's native placement.
- Conducted computational experiments to evaluate Tensorflow memory allocation at varying transformer model sizes.

Digital Humanities Project, UIUC (Advised by Prof. Lawrence Angrave) Jun 2021 – May 2022

- Detected faces within moving and still images through computer vision algorithms in Google MediaPipe and OpenCV2.
- Implemented non-negative matrix factorization and principal component analysis to extract skin colors from facial patches.
- Wrote multithreaded Python web scrapers to generate testing/training datasets by batch-downloading sets of 1500+ images.

ACTIVITIES

API Lead, HackIllinois Jul 2023 – present

- Leading team of 4 developers in migrating API for HackIllinois (UIUC's student-run hackathon) from Go to TypeScript.
- Implemented OAuth2.0, Typescript-based dev environment (ESLint + MongoDB), and Vercel deployment automations.

Lead Course Assistant (Software Design Lab), UIUC May 2022 – present

- Managed hiring and onboarding of 100+ course staff every semester.
- Developed k-means-clustering and bipartite graph matching algorithms in Python to create teams of 4 from 400+ students, based on student skills and team preferences.
- Presented 10+ lectures per semester on varying software engineering topics (cloud, databases, distributed systems, etc).

Infrastructure Committee Co-Chair, Association for Computing Machinery @ UIUC Dec 2022 – May 2022

- Spearheaded 7 team leads and 39 developers in developing robust software for day-to-day ACM club operations.
- Redesigned public-facing services used by 1000+ members, events API, e-billing system (Stripe API), and resume book.
- Enhanced functionality of in-house tooling, including internal mail server, admin dashboard, and cloud cluster.

PROJECTS

Distributed File System [🔗](#)

- A simple distributed file system, similar to Hadoop's Distributed File System.
- Designed and implemented a versioned file system running on 10 machines, tolerating up to 3 machine failures.
- Supported operations: put, get, delete, ls, store, and get-versions.
- Built primarily in Python, using streaming socket programming (self-implemented file transfer protocol).

Distributed ML Training Platform [🔗](#)

- Developed a distributed fault-tolerant machine learning platform for training and inference.
- Extensively tested the platform, to demonstrate agile inference for various neural networks.
- Built in Python, and implemented model serving through Tensorflow Keras.

SKILLS

Programming Languages

C/C++, Python, C#, CUDA, Java, JavaScript, TypeScript, MIPS, x86.

Data Science/AI

SQL, U-SQL, Numpy, Pandas, Tensorflow, Pytorch, SKLearn, OpenCV.

Misc

Git/Github, Azure, AWS, GCP, Linux, Firebase.