AYDAN PIRANI

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EDUCATION

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

- **GPA:** 4.0/4.0
- **Coursework:** Advanced Distributed Systems, Topics in LLM Agents, Fault-Tolerant Consistent Data Systems, Advanced Databases, Distributed Algos, Systems and Algos for AI.
- **Teaching**: Software Design Lab (Teaching Assistant).

Bachelor of Science in Computer Science, University of Illinois at Urbana-Champaign **2024**

- **GPA:** 3.83/4.0
- **Coursework:** Cloud Computing, Distributed Systems, Cloud Storage Systems, Communication Networks, Parallel Programming, Security, Operating Systems, System Programming, Database Systems, AI, Deep Learning, Comp Arch.
- **Teaching**: Intro to CS II, Software Design Lab (Lead Course Assistant), System Programming.

EXPERIENCE

NVIDIA, **Software Engineering Intern** **03/2024 — 09/2024**

- Developed a CUDA feature to significantly reduce program instructions executed under specific user workloads, reducing overall latency.
- Prototyped novel framework and paradigm for efficient automated denoising of bringup test results on CUDA workloads.
- Implemented lock-free data structures, leading to enhanced performance and increased throughput in multi-threaded applications.

Microsoft, **Software Engineering Intern** **05/2023 — 08/2023**

- Reduced API workload by 91% by redesigning device acceptance service, which runs on 25 clusters and serves 1500+ network devices.
- Converted service from stateless to stateful by developing Azure Blob cache and internal-facing Azure Blob Storage handler.
- Wrote automated unit tests to achieve 100% coverage, enabling detection and fixes of latent bugs on 1500+ devices.

Microsoft, **Software Engineering Intern** **05/2022 — 08/2022**

- Developed and deployed an ML model using IP data to detect fraudulent accounts, improving detection coverage by 5%.
- Conducted experiments to find best indicators of fraudulent activity, and developed scripts to featurize IPFIX streams.
- Built an end-to-end Data Factory pipeline to automate data ingestion, perform inference, and flag fraudulent accounts for review.

Meta, **ABCS Scholar** **08/2021 — 11/2021**

- One of 30 students selected for an intensive 10-week bootcamp, focused on algorithms, data structures, and software development.

Google, **CSSI Scholar** **06/2021 — 08/2021**

- Selected for advanced track: curriculum taught by Google engineers, including frontend development, databases, and cloud services.

PROJECTS

Distributed ML Training Platform

- Built a generalizable system that supports training and agile inference for neural networks (including Resnet, Inception, NMT, etc).
- Ensured data integrity and availability throughout both phases by using NFS to store compressed data, models, and query results.
- Implemented fair-time inference, maintaining processing rates within 20% of each other and handling up to 3 machine failures.

Distributed Network File System

- Designed a scalable + reliable distributed file system using Python, tolerating up to 3 simultaneous machine failures.
- Implemented quorum-based consistency levels for writes and reads, enabling file operations and retrieval of multiple file versions.
- Handled various failure scenarios, including node failures/ rejoins, network partitions, and leader server failures, and leader election.

TECHNICAL LEADERSHIP

Development Chair, **Reflections-Projections** **01/2024 — 08/2024**

- Developed infra for Reflections-Projections (Midwest's Largest Tech Conference) using EC2, TypeScript, MongoDB, and Nginx.
- Supported auth capabilities for 3000+ accounts by building in-house OAuth2.0-compliant authentication platform.
- Implemented an end-to-end QR scanning system for 2500+ attendees and 50+ staff members, enabling advanced attendee metrics.

API Lead, **HackIllinois** **06/2023 — 03/2024**

- Led 4 developers in redesigning the API for HackIllinois (UIUC's student-run hackathon) in a monolithic TypeScript architecture.
- Added support for 13+ internal services and 6+ external services, to be used by 750+ attendees and 50+ staff members.
- Reduced costs by 98.5% by redesigning database schemas, building CI/CD pipelines, and streamlining internal test suites.

SKILLS

Languages: C/C++, Python, C#, CUDA, Java, JavaScript, TypeScript, SQL, Go, Rust, U-SQL, MIPS, x86.

Machine Learning: NumPy, Pandas, TensorFlow, PyTorch, Scikit-learn, OpenCV.

Tools & Platforms: Git, GitHub, Azure, AWS, GCP, Firebase, MongoDB, Linux, Docker, CI/CD, REST, OAuth2, Nginx.