

ADNAN AMAN

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EDUCATION

University of California, Berkeley

Bachelor of Arts in Computer Science

Expected Graduation: December 2024

GPA: 3.6/4.0

Relevant Coursework:

Operating Systems, Machine Learning, Database Systems, Computer Security, Networks, Algorithms, Computer Architecture, Computer Vision, Data Structures, Optimization Models in Engineering, Probability for Data Science

EXPERIENCE

Software Engineer Intern

May 2024 – August 2024

Microsoft (Azure ML)

Redmond, WA

- Designed and implemented a large-scale distributed tracing infrastructure using Go and Python for ML inference endpoints, reducing system debugging time by 40% and generating annual operational cost savings of \$500K
- Developed comprehensive service monitoring capabilities by integrating OpenTelemetry SDK with Envoy proxy configurations, enabling end-to-end visibility and enhanced debugging across distributed microservices
- Created a real-time trace visualization and monitoring dashboard supporting 3M requests per second with custom instrumentation layers, decreasing mean time to resolution by 25% for production incidents
- Implemented automated CI/CD pipelines with reusable deployment templates using Azure DevOps, improving deployment reliability by 30% and standardizing release processes across 15+ microservices

Academic Instructor

June 2023 – August 2023

University of California, Berkeley

Berkeley, CA

- Mentored 200+ students in UC Berkeley's Data Structures course through weekly office hours and lab sections
- Created course materials and provided debugging support, leading to 25% improvement in project scores

PROJECTS

Pintos Operating System | C

September 2024 – December 2024

- Developed an OS using C and POSIX APIs by extending a barebones kernel to support user processes, multithreading, and memory management, handling page faults, implementing synchronization primitives
- Implemented strict priority thread scheduling, alongside efficient timer mechanisms and deadlock avoidance strategies, significantly enhancing system robustness, responsiveness, and performance under different workloads
- Designed and integrated a comprehensive file system with path resolution, buffer cache, hierarchical directories, file extensions, and complete path navigation, optimizing file I/O operations and enhancing system functionality

Distributed MapReduce System | Rust

November 2024

- Implemented a fault-tolerant distributed computing system in Rust with a coordinator process that managed worker nodes through gRPC, featuring automatic task redistribution and failure detection via heartbeat monitoring
- Developed thread-safe job scheduling, implementing parallel task distribution, worker registration, and status reporting while ensuring system reliability through robust error handling and task recovery mechanisms

MNIST Generation with Diffusion Models | PyTorch, Python | Computer Vision |

November 2024

- Built three MNIST diffusion models from scratch: base UNet for single-step denoising, time-conditioned UNet for multi-step generation, and class-conditioned UNet with classifier-free guidance for digit generation
- Implemented custom sampling algorithms for each model variant, optimizing inference steps and noise levels for high-quality digit generation across multiple model types and sampling methods
- Integrated DeepFloyd IF model to create image manipulation tools supporting inpainting with custom masking, denoising at variable timesteps, visual anagrams, and frequency-based hybrid image generation

Talking-Oski | Next.js, React, Tailwind CSS, MongoDB | CalHacks 2024

October 2024

- Created campus assistant using Next.js and React, enabling real-time voice interactions for visually impaired
- Designed event tracking system with MongoDB, implementing automated scraping of daily campus activities

TECHNICAL SKILLS

Languages: Java (5 yrs), Python (4 yrs), C (3 yrs), Go (2 yrs), TypeScript/Javascript (1 yr), SQL, Rust, x86 Assembly

Libraries & Frameworks: React, Next.js, Node.js, Express.js, OpenTelemetry, JUnit

Developer Tools: Git, Docker, AWS, Azure, MongoDB, Linux, Valgrind, GDB, Bash

Machine Learning: PyTorch, Scikit-Learn, OpenCV, NumPy, Pandas, SciPy