Muhammad Ahmad Kashif

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Education

Lahore University of Management Sciences (LUMS Lahore, Pakistan
BS Computer Science (Completed Sophomore Year) *Aug. 2022 – May 2026*

Experience

Create for Science Intern, Carl Sagan Program March 2024 – May 2024
Syed Babar Ali School of Science and Engineering (SBASSE), LUMS *Lahore, Pakistan*

- Collaborated on science communication projects, enhancing storytelling, leadership, and interdisciplinary collaboration skills.
- Produced and edited high-quality video content using DaVinci Resolve and CapCut; captured footage using professional camera and gimbal setups.
- Covered and reported on major academic events, including CIMPA Research School, involving international researchers and scholars.
- Conducted interviews with scientists, instructors, and guests, improving public speaking and on-camera communication proficiency.

Full-Time Teaching Assistant - Calculus 2 Sep. 2024 – Dec. 2024
LUMS Mathematics Department *Lahore, Pakistan*

- Conducted tutorials, graded assignments and quizzes, and held office hours for 120+ students.
- Helped students understand advanced calculus concepts, improving their analytical skills.

Projects

AI-Powered Job Aggregation Platform | *React, PostgreSQL (Sequelize), AWS* March 2025 – May 2025

- Developed a production-ready, full-stack platform integrating AI to personalize job discovery and networking for job seekers.
- Used Gemini API to deliver profile-tailored job suggestions and generate real-time, context-specific cover letters.
- Scraped and updated thousands of job listings daily using Selenium and BeautifulSoup, with error handling and retry logic.
- Built an intuitive dashboard with full CRUD operations, real-time recruiter chat, and an AI-powered personal job assistant.
- Implemented JWT-based authentication and role-based access; deployed on AWS EC2 with CI/CD integration.
- Achieved high test coverage with automated unit and E2E tests using Jest and Selenium; ensured reliability across workflows.

Arduino USB Bootloader Exploit | *C · LUFA · AVR-GCC* May 2025

- Reverse-engineered interrupt vector; inserted watchdog-triggered jump to payload (→ persistent).
- Crafted Python flashing tool; automated patching of HEX pages and CRC fix-up in ¡2s.

Distributed Key-Value Store using Raft Consensus Algorithm | *Go, Distributed Systems, Raft* Sept. 2024

- Developed a distributed, DynamoDB-inspired key-value store built on the Raft consensus algorithm using Go.
- Implemented core Raft components including leader election, log replication, and failure recovery under non-Byzantine conditions.
- Ensured strong consistency and high availability across complex edge cases.
- Conducted thorough end-to-end testing to validate correctness, convergence, and consensus under concurrent client operations.
- Designed the system to handle unreliable log replication and recover from leader failures without compromising data integrity.

Diffusion Models and Generative ML Applications | *Python, PyTorch, NumPy* Sept. 2024

- Implemented denoising diffusion probabilistic models (DDPM) from scratch to generate high-quality synthetic image data.
- Explored and compared conditional and unconditional generation using techniques like classifier guidance and U-Net architectures.
- Trained models on benchmark datasets (e.g., MNIST, CIFAR-10), analyzing convergence, quality, and sampling efficiency.
- Studied the mathematical foundations of forward and reverse diffusion processes and optimized noise scheduling for better performance.

Technical Skills

Languages: Python, C/C++, Go, Bash, JavaScript, Typescript, Haskell, MERN Stack Development,
Developer Tools: Git, Docker, Jupyter NoteBook, VS Code, Visual Studio, Google Collabs, Anaconda
Technologies: Socket Programming, Channels (Go), Distributed Systems, Concurrency, RPCs, Memory Management, File Systems, Custom Threading Libraries, MERN Stack