Apoorva Kashyap

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Skills

Languages: C++ (14/17), C, Python, SQL, JavaScript
Systems & Networking: TCP/IP, UDP, Raw Socket Programming, Multi-threading, Linux Kernel, CMake, GDB, Wireshark
Cloud & DevOps: Kubernetes, Docker, Argo Workflows, AWS, Git, CI/CD
Data & Web: PostgreSQL, Redis, Parquet, Zarr, FastAPI, SvelteKit, PyTorch, NumPy

Work Experience

Indian Institute of Technology, Delhi Project Asst. Delhi, India Dec 2025 - Present
- Architected a columnar storage system for satellite imagery and LiDAR datasets using Zarr & Parquet, reducing storage footprint by 50% through optimised chunking and compression (zstd, GZIP).

Indian Institute of Technology, Delhi Junior Research Fellow Delhi, India Jul 2024 - Jul 2025
- Architected a custom Layer-4 network protocol for underwater acoustic modems using C++17 and Linux raw sockets, overcoming severe multipath fading and signal attenuation
- Integrated advanced modulation and error correction techniques to improve data integrity and reduce packet loss under variable underwater conditions.
- Optimised packet serialisation using binary packing structures and reduced header size, for bandwidth-constrained channels (<1 kbps).
- Implemented ECDH with AES-GCM & KeyStore-based encryption (via Botan) to secure underwater data transmission without compromising real-time performance.

Numerator India Research Associate Hyderabad, India Apr 2024 - Jul 2024
- Designed Surveys and analysed survey data (R, Python) & created impactful dashboards.
- Optimised productivity and reduced admin workload by 20% with a self-developed system.
- Skilled in data visualisation & presentation.

Education

IGNOU, New Delhi **Graduation: Jun 2026**
Master's in Computer Applications **Percentage:** Pursuing
Coursework: Artificial Intelligence and Machine Learning, Data Science and Big Data, Data Warehousing and Data Mining, Cloud Computing and IoT, Web Technologies, Object-Oriented Analysis and Design, Data Communication and Computer Networks, Software Engineering

Gati Shakti Vishwavidyalaya, Vadodara **Graduation: Jun 2022**
Bachelor of Science in Transportation Technology **GPA:** 8.74/10.00
Distinctions: Top 5% of Class
Coursework: Programming Languages, Linear and Dynamic Programming, Data Analysis and Representation, Mathematical Modelling, Flows in Transportation Networks, Principles of Information Systems, Systems Thinking, Project Management, Essentials of Business Technology

Projects

CineRec - A Movie Recommendation System *(In-Progress - MCA Final Sem Project)*
- Built a hybrid ML recommendation system using collaborative filtering and content-based filtering, optimised for cold-start scenarios.
- Deployed a **FastAPI** backend with **Redis caching** to handle high-concurrency request loads, reducing API latency to <50ms.
- Developed a full-stack application with SvelteKit frontend and PostgreSQL database
- Implemented JWT authentication, questionnaire-driven cold-start handling, and MovieLens/TMDB API integration

Batch Event Processor - Kubernetes-Native Data Pipeline for MLOps
- Built a scalable batch processing system using Python, Argo Workflows, and Kubernetes for event-driven data aggregation
- Implemented containerised microservices with PostgreSQL for processing event data in batches
- Deployed orchestrated workflows on Minikube with automated setup scripts