

Aryan Mehta

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EDUCATION

Jaypee Institute of Information Technology

Bachelor of Technology in Computer Science | **CGPA: 7.57**

Noida, U.P

Aug. 2024 – Present

New Beersheba Senior Secondary School

PCM + Computer Science | **93.3%**

Pithoragarh, U.K

Apr. 2021 – May 2023

EXPERIENCE

InAmigos Foundation

Data Analytics Intern

Remote

May 2026 – July 2026

- Compiled structured datasets on 15+ volunteer opportunities and 10 NGOs, using AI tools to synthesize social impact trends into strategic growth reports.
- Built a synthetic data pipeline (Python, pandas) as a self-directed follow-up project, simulating realistic NGO data-quality issues since real organizational data wasn't accessible.
- Applied PCA and K-Means clustering to segment 28 states into 3 empirically-justified performance tiers.
- Deployed an interactive Streamlit dashboard with live KPI rows and statistical hypothesis testing, backed by a 39-test automated pytest suite.

ACHIEVEMENTS

- Code Clash – Rapid Programming Hub:** 2x 1st Place Champion ('25 & '26) | 2nd Place, 26.1 | 5th Place, 25.2
- 3rd Place – OSDHack 2025,** OSDC
- Google Cloud Arcade –** Arcade Trooper Tier, Core GCP Services (Compute Engine, Storage, IAM)

PROJECTS

Redis Server Implementation | C++17, POSIX Sockets, Multi-threading

Jul. 2026

- Programmed a multi-threaded Redis server in C++17 utilizing raw POSIX sockets, deploying a thread-per-client concurrency model with fine-grained mutex locking.[cite: 6]
- Constructed a master-replica replication system supporting the PSYNC handshake, asynchronous command propagation, and synchronous acknowledgment via WAIT.[cite: 6]
- Designed a custom streaming parser for the Redis Serialization Protocol (RESP) and an RDB loader to deserialize persistent binary snapshots into memory.[cite: 6]

SQLite Database Engine | C++23, B-Trees, Binary Protocols, CMake

Jun. 2026

- Built a SQLite-compatible database engine in C++23 to parse raw binary .db files, extracting 100-byte headers and decoding variable-length integers (Varints).[cite: 5]
- Implemented a recursive B-Tree traversal algorithm supporting both interior and leaf pages, decoding cell pointer arrays for efficient row retrieval.[cite: 5]
- Developed a query optimizer that reduces lookup latency by executing $O(\log N)$ index scans instead of full table scans for filtered SELECT statements.[cite: 5]

Git Implementation in C++23 | C++23, SHA-1, Zlib, Systems Programming

May 2026

- Engineered a Git client from scratch in C++23, implementing manual binary packfile parsing and HTTP smart protocol handshakes without external networking libraries.[cite: 1]
- Developed a delta compression resolution engine to reconstruct objects from OFS_DELTA and REF_DELTA instructions via bit-level manipulation and zlib decompression.[cite: 1]
- Built a content-addressable storage system using SHA-1 hashing to store and retrieve compressed blobs, trees, and commit objects directly from the filesystem.[cite: 1]

TECHNICAL SKILLS

Languages: C++, Java, C, Python, JavaScript (Node.js), MySQL, HTML, CSS, Bash

Competitive Programming: Codeforces (Pupil), CodeChef (3★), HackerRank (5★), 500+ Problems (CodingNinjas)

Core Concepts: Data Structures & Algorithms, Object-Oriented Programming (OOP), Multithreading, OS

Libraries: STL (Standard Template Library), NumPy, Pandas, Scikit-learn

Developer Tools: Linux (5+ years), Git, GitHub, Google Cloud Platform, VS Code, NeoVim