

Mankirat Singh

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EDUCATION

Thapar Institute of Engineering and Technology, Patiala

Expected May, 2026

B.E. Computer Engineering

Dayanand Public School, Nabha

2022

CBSE - PCM (Physics, Chemistry, Mathematics)

EXPERIENCE

Open Source Contributor

May 2025 - September 2025

Google Summer of Code - PostgreSQL

Remote

- Built an [ABI compliance reporting system](#) for PostgreSQL with Perl and libabigail, improving software stability.
- Collaborated with PostgreSQL core contributors to refine the tool based on the community's requirements.
- Designed the tool to play a key role in PostgreSQL 18, ensuring ABI stability in future minor releases.
- Navigated a 20-year-old undocumented codebase of Postgres BuildFarm, demonstrating strong analytical abilities.
- Authored [technical documentation](#) to support the PostgreSQL community and promote knowledge sharing.

Associate Software Development Intern

June 2025 - August 2025

Fenmo.AI

Remote

- Automated financial reconciliation for 50+ daily PDFs using LLM, reducing huge manual processing effort.
- Implemented scalable backend with FastAPI and Celery workers to automate and speed-up financial reconciliation.
- Engineered reliable data extraction pipelines with 95% accuracy, multi-format support, and automated validation.
- Enhanced the data classification pipeline, increasing output coverage from 85% to 99% by resolving edge case issues.

Student Developer Intern

January 2024 - February 2025

Thapar Institute of Engineering and Technology

On Site

- Implemented constraints in Python for a Genetic Algorithm-based time-table scheduler handling 500+ courses.
- Developed SQL procedures for teacher allocation, considering constraints like teacher workload and subject credits.
- Developed FastAPI endpoints for seamless backend interaction with the scheduling dashboard interface.

PROJECTS

LUNAR (ReactJS, ThreeJS, YOLOv5, U-Net Image Segmentation)

[Project Link](#)

Detection of Safe Navigation Routes on Moon for rovers based on Chandrayan 2 Data.

- Reconstructed 3D lunar surface by geo-referencing Chandrayaan-2 data using Three.js in React.
- Analyzed IIRS spectral data to identify top 10 points of interest for research using Anomaly Detection.
- Simulated rover traversal on lunar terrain in a web-based 3D environment by using Cannon.js with Three.js.
- Awarded by **President of India** as National Winners of ISRO's Bharatiya Antariksh Hackathon.

Feedback Application System (Flutter, ReactJS, PHP, MySQL)

[Play Store Link](#)

App to seamlessly collect and manage student feedback for teachers.

- Developed a Flutter frontend with PHP APIs and role-specific interfaces handling 7 different types of users.
- Architected the system to handle scalability and performance for 10,000+ users across the institute.
- Coded 20+ data analytics APIs for the admin panel using advanced SQL queries, providing actionable insights.
- Implemented backend containerisation using Docker Compose to ensure seamless development across machines.

InSMoS (Python, FastAPI, PostgreSQL, TimescaleDB, RabbitMQ)

[Under Progress](#)

Real time Infantile Spasms Detection System in collaboration with **PGI Chandigarh**.

- Engineered a real-time ingestion pipeline using MQTT with RabbitMQ and ESP32 to collect EEG signals.
- Fabricated and implemented a backend service with Python and FastAPI for EEG time series data.
- Utilized PostgreSQL with TimescaleDB to efficiently store and manage high volume(256 SPS) EEG time series data.
- Developed a bidirectional channel using WebSockets to deliver real-time data from backend to frontend.

TECHNICAL SKILLS

Languages C, C++, Python, Perl, Bash, JavaScript, Dart, PHP, Typescript, HTML/CSS

Tools Linux, Docker, Flutter, NextJS, NodeJS, FastAPI, Redis, DynamoDB, MongoDB, SQL

Libraries/Cloud ReactJS, SKLearn, Faiss, Instructor, Transformers, Firebase, AWS, GCP, GitHub Actions

Competitive Programming Rated 900+ on Codeforces([Profile](#)).

LEADERSHIP EXPERIENCE

Technical Head, Microsoft Learn Student Chapter, TIET

April 2024 - Present

- Mentored 150+ students on hackathons, open-source, and guiding the chapter's overall direction in technology.
- Led teams of 20 developers as Coordinator for Makeathon 6 [Website](#) (2000+ visitors) and [App](#) (300+ users).

ACHIEVEMENTS

National Winners Bharatiya Antariksh Hackathon by ISRO on 1st National Space Day August 2024

Runner Up Rewarded at HackTU 5.0 hackathon conducted by CCS TIET February 2024

Hackathon Winner First place in OWASP TIET Internal Hackathon July 2023