

# Anurag Chakarde

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## EDUCATION

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**Thapar Institute of Engineering and Technology**

*Bachelor of Engineering in Computer Engineering*

Patiala, PB

*September 2022 – June 2026*

## TECHNICAL SKILLS

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**Languages:** Python, C/C++, JavaScript, SQL, HTML/CSS

**Frameworks:** Node.js, Express.js, Tailwind CSS, React.js, Next.js

**Databases:** MySQL, MongoDB, Mongoose

**Developer Tools:** Git, GitHub, Postman, VS Code, Jupyter Notebooks

**Hardware/IoT:** ESP32, AD8232, Serial/WiFi Communication

## RESEARCH WORK

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**A Low-Cost IoT-Enabled ECG Monitoring and Classification System Using Residual 1D CNN**

Co-authored the research paper and presented it at the International Conference on Internet of Things and Connected Technologies (ICIoTCT 2025).

## PROJECTS

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**FIT BEAT: Real-Time ECG Monitoring and Classification System**

[Live Link](#)

*ESP32, AD8232, Python, WFDB, TensorFlow, React, Supabase*

- Designed and **implemented a real-time ECG monitoring system using ESP32 and AD8232** ECG front-end module with 500 Hz sampling rate.
- Implemented a **Python-based acquisition pipeline for preprocessing** with 4 steps filtering (outlier removal, high-pass filtering, baseline correction, normalization).
- Built and trained a **lightweight Residual 1D CNN model** on Chapman 2018 ECG dataset for classifying 77 cardiac conditions.
- Utilized **Supabase** for backend and **React** for front-end to develop **real-time visualization dashboard and emergency alert system**.

**Search Engine (Crawler + BM25) | Python, BeautifulSoup, BM25, FastAPI**

- Engineered a **domain-constrained web crawler** using BFS traversal, depth limiting, URL normalization, and hash-based deduplication to systematically collect and index content from Reddit, Medium, and GitHub.
- Developed a **text processing pipeline** with HTML DOM parsing (BeautifulSoup), tokenization, stopword removal, and document normalization for efficient indexing.
- Implemented **BM25-based ranking** for information retrieval, optimizing relevance by normalizing term frequency and document length, and exposed a **FastAPI-based search service** for low-latency query processing.

**Bureautrac — Government Infrastructure Tracker** [🔗](#) | *Hyperledger Fabric, Next.js, Express, Docker*

- Architected a **permissioned blockchain network** on Hyperledger Fabric 2.5 with 9 organizations, 3 isolated channels (project execution, supply chain, financial oversight), and etcdRaft consensus.
- Developed **smart contract (chaincode)** implementing MSP-based access control, work-package submission, engineer certification workflows, and paginated ledger queries with full transaction history.
- Built an **Express.js REST API** with Fabric CA integration for identity management, and configured **Docker-orchestrated deployment** with TLS encryption and X.509 certificate-based authentication.

## CERTIFICATIONS AND ACHIEVEMENTS

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**HackerRank Intermediate SQL** [Certificate link]