

# HARMANPREET SINGH

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## PROFESSIONAL SUMMARY

Software Engineer with experience in Angular, ASP.NET Core, and SCADA/HMI system development. Skilled in building real-time applications using SignalR, designing optimized database schemas, and automating industrial workflows. Strong background in AI/ML fundamentals, computer vision, and agent-based systems. Passionate about building reliable, scalable, and maintainable software solutions.

## TECHNICAL SKILLS

**Languages:** JavaScript, Python, C, C++, Java

**Frameworks:** Angular (Material UI), ASP.NET Web API, SignalR, JWT

**Databases:** PostgreSQL, CouchDB, Oracle

**ML/AI:** Scikit-learn, TensorFlow, MediaPipe, OpenCV, NLTK

**Tools:** Git, GitHub, Visual Studio, CrewAI Framework, Wireshark

**AI Tools:** Claude Code, Cursor, Antigravity, GitHub Copilot

**Practices:** Agile, REST APIs, Real-Time Systems, CI/CD

**Coursework:** DSA, DBMS, Computer Networks, OOPs, OS

## EDUCATION

**Punjabi University, Patiala**

PhD in Computer Science (Part-Time)  
2025 – Present

**Thapar Institute of Engineering & Technology**

Master of Computer Applications  
2023 – 2025 CGPA: 8.94/10

**Maharaja Ranjit Singh PTU, Bathinda**

Bachelor of Computer Applications  
2020 – 2023 CGPA: 8.2/10

## PROFESSIONAL EXPERIENCE

**RBH Solutions Pvt. Limited — Software Engineer**

Jan 2025 – Present | Patiala

- Developing SCADA/HMI systems using Angular, ASP.NET Core, and SignalR for real-time industrial operations monitoring.
- Creating dashboards and event views with live data updates through SignalR-based streaming pipelines.
- Designing efficient PostgreSQL queries, triggers, and data models to improve system performance and reliability.
- Optimized CouchDB data sync speed by **8x** by replacing individual document operations with `bulk_get` and `bulk_docs` APIs, significantly reducing round-trips and improving SAP data integration throughput.
- Automating substation reporting workflows using backend data extraction, processing, and integration modules.
- Using Wireshark and protocol analyzers to debug and trace real-time industrial communication issues.
- Participated in agile sprint workflows, team code reviews, and collaborative development sessions.
- Leveraged AI-assisted development tools including Claude Code and Cursor AI to accelerate feature delivery, improve code quality, and reduce debugging time across SCADA modules.

**JJPMETA Systems — AI Development Intern**

June 2024 – July 2024 | Bathinda

- Developed lightweight Python-based autonomous agents using CrewAI to automate routine business workflows.
- Integrated REST APIs into agent pipelines for data processing, retrieval, and multi-agent task coordination.
- Explored multi-agent coordination concepts including task assignment, role delegation, and agent communication.

## TECHNICAL PROJECTS

**Gym Exercise Posture Correction System**  

Python, OpenCV, MediaPipe

- Detected **4 exercises** in real-time using MediaPipe pose models with angle-based rule logic.
- Collected threshold body-angle values from real gym sessions to accurately detect and flag incorrect postures.
- Optimized OpenCV video processing pipelines for smooth real-time feedback with on-screen correction overlays.

**Real-Time Chat Platform**

Angular, ASP.NET Core, PostgreSQL, SignalR

- Built real-time chat with SignalR supporting **100+** concurrent users with JWT-based auth and message authorization.
- Designed PostgreSQL schema for efficient message history storage; supported attachments and location sharing.
- Added features including blocking/unblocking users, message forwarding, broadcast messaging, and first/last seen.

**Multi-Agent Task Automation System**

Python, CrewAI

- Developed agent-based workflows using CrewAI to automate repetitive tasks with coordinated message handling.
- Integrated REST APIs for inter-agent communication, data retrieval, and sequential task execution pipelines.

## ACHIEVEMENTS & CERTIFICATIONS

- Winner, Inter-College Website Design Competition 2023.
- Completed full-stack training at RBH Solutions with 95% score; modules deployed in live enterprise SCADA systems.
- Active competitive programmer — [LeetCode Profile](#).
- Completed full-stack training program with focus on Angular, ASP.NET Core, and real-time systems architecture.