SNAZAL SINGH

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TECHNICAL SKILLS

Generative AI & Agents: AI Agents, LLMs (Llama-30B, GPT-4), RAG Pipelines (Pinecone), Prompt Engineering, n8n.
Computer Vision: OpenCV, MediaPipe, Pose Estimation, Object Tracking (YOLO/SORT), SPAD Imaging.
Languages: Python, C++, Java, SQL, Bash/Shell Scripting.
Frameworks & Libraries: PyTorch, TensorFlow, Scikit-learn, Pandas, NumPy, Flask/FastAPI.
Tools & MLOps: Docker, Git/GitHub, Linux, MCP (Model Context Protocol), Visual Studio Code.

PROFESSIONAL EXPERIENCE

AI Engineer Jan 2025 – Present
FedEx XSmart Center *Remote / Hybrid*

- Fine-tuned **Llama-30B** using **LoRA**/**QLoRA** on internal logistics corpora; established automated pipelines to evaluate domain alignment, hallucination rates, and reliability.
- Architected a full **RAG system** using **Pinecone + OpenAI + n8n**, handling data ingestion, retrieval optimization, and multi-case evaluation.
- Designed advanced AI workflows: **Semantic Drift Detection** using embeddings, **n8n AI Agents**, and **MCP Server** ↔ **Client** integration for seamless tool execution.
- Automated local workflows via **Claude Desktop** ↔ **Local MCP Server** (Filesystem) integration.
- Developed LLM-powered assistants for forecasting, inventory intelligence, and operational Q&A.
- Built **EcoSmart Fleet**, an AI-driven engine using geolocation and weather APIs for sustainable vehicle allocation.

Project Associate - Sports Science & Analytics Aug 2023 – Present
Indian Institute of Technology Madras (CESSA) *Chennai, India*

- Lead the development of **Deep Learning frameworks** for cricket and tennis analytics, delivering solutions to clients like **RCB (Royal Challengers Bangalore)** and Chimpenu.
- Built pipelines to extract match events (4s, 6s, wickets) and compute ball release angles/speeds from broadcast footage.
- Designed automated unit testing frameworks for evaluator models and curated training-grade tennis datasets.
- Developed an AI agent to automatically extract structured scoreboard data from video feeds.

Computer Vision Intern (HiLCPS Lab) Mar 2023 – Jun 2023
Indian Institute of Technology Madras *Chennai, India*

- Developed **Pose Estimation** pipelines to track boxer movements and analyze athlete traits.
- Applied ML techniques to model movement patterns, contributing to performance enhancement insights.

KEY PROJECTS

Depth Estimation from SPAD Sensor Data | *Neural Networks, 3D Reconstruction* IIT Madras

- Designed a neural network to estimate depth from Single-Photon Avalanche Diode (SPAD) data, enabling high-precision 3D reconstruction in photon-limited conditions.

Human Emotion Recognition | *CNN, Deep Learning, Image Processing* MCA Project

- Developed a Convolutional Neural Network (CNN) achieving **70% validation accuracy** for multi-class facial emotion recognition.

Gesture-Based Volume Control | *OpenCV, MediaPipe* Personal Project

- Built a real-time system mapping hand landmarks to system volume controls using computer vision.

EDUCATION

Master of Computer Applications (MCA) Jul 2023
Central University of Karnataka *CGPA: 7.88/10*

Modern Computer Vision (Specialized Coursework) 2025
Indian Institute of Technology Madras *Visiting Scholar*

Bachelor of Computer Applications (BCA) Jun 2021
Arcade Business College, Patna *CGPA: 7.6/10*

CERTIFICATIONS

Full Stack Generative and Agentic AI with Python | Udemy View Certificate
Python for Computer Vision with OpenCV and Deep Learning | Udemy View Certificate
Data Science Internship | Exposys Data Labs View Certificate
HTML5 and CSS3 Fundamentals | Udemy View Certificate