Kunal Chandra

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Experience

Defence Research and Development Organisation (DRDO), Delhi 1st **January2026-31**st **January2026**

(Solid State Physics Laboratory – SSPL) | Machine Learning Intern | Link

- Developed a **Siamese Deep Learning–based change detection system (SNUNet)** for **multi-temporal satellite imagery**, focused on **automated detection**, **quantification**, and **semantic analysis** of land-surface changes.
- Enabled **defence-grade intelligence** workflows by automating **border surveillance**, **infrastructure monitoring**, and **disaster damage assessment**, reducing manual analysis and decision latency.
- Achieved **96.37% Precision**, **95.95% Recall**, and **96.16% F1-Score** on the CDD dataset using attention mechanisms, dense skip connections, and a **hybrid loss (BCE + Dice + Focal)**, significantly improving robustness on real-world remote sensing data.

Intelligence Fusion & Strategic Operations (IFSO) Special Cell, Delhi Police 1st **August 2025-31**st**August2025**

Data Science Intern | Link

- Built **AI-Driven Object Mapping** & **Dynamic Script Modification** tool to analyze Python GUI scripts, detect widgets, and auto-inject event methods.
- Utilized **AST parsing, regex, JSON handling**, and **dynamic code generation**, and trained a model to act as an AI coding assistant for developers' code files.

Technical Skills

Languages: Python, Java, C, HTML, CSS

Frameworks & Libraries: Pandas, NumPy, Matplotlib, Seaborn, OpenCV, NLTK,Scikit-learn, TensorFlow, Keras, PyTorch, YOLOv8, BYTETrack,Tesseract OCR, Flask, Streamlit,Gradio,XGBoost,Node.js,MediaPipe,FastAPI

Databases & Developer Tools: MongoDB, MySQL,SQL,GitHub,Git, Docker,LLMs, Jupyter Notebook, Google Colab, VS Code.

Projects

Intelligent Traffic Signal Control System (SMARTFLOW) | Project | Live

- Developed an **AI-driven traffic management system** using **YOLOv8** for real-time vehicle detection, **BYTETracker** for robust object tracking, and React for the user interface.
- Achieved up to **30% congestion reduction** by implementing dynamic signal timing powered by **Reinforcement Learning + LSTM-based decision models**.Integrated **IoT hardware (ESP32 with RFID)** to prioritize emergency vehicles and implemented dynamic signal timing for congestion reduction.

Pravha -AI-Powered Flood Forecasting & Emergency Response System | Project | Live

- Designed a **proactive AI-driven flood forecasting system** that predicts flood severity before it occurs using an **XGBoost ML model (86.5% accuracy)** and real-time environmental data, delivering alerts in **12 Indian languages**, **enabling 95% faster** response times, and reducing **expected casualties by 70% (960–1280 lives/year).**
- Built a scalable full-stack architecture using **FastAPI (Python), MongoDB, React+TypeScript, Survam AI**, and **Docker**, integrating **GIS mapping, SOS automation**, and **real-time monitoring** in a production-ready microservice ecosystem.

DSCoin: Educational Blockchain Implementation | Project

- Developed a **Java-based cryptocurrency system** implementing core blockchain concepts such as **proof-of-work mining, transaction validation**, and **Merkle trees.**
- Utilized **Java, SHA-256 hashing, data structures (Queues, Linked lists, Merkle trees)** to simulate mining rewards, transaction flow, and blockchain security.

Education

Haridwar University   **September2023 – June 2027**

Bachelor of Technology (Computer Science and Engineering) |**CGPA :8.37**

Indian Institute of Technology Mandi   **August 2025-June 2026**

Minor in Artificial Intelligence & Data Science

Sam International School

ClassX:94% | CLASS XII:76.4%

Certifications and Achievements

- Cleared **CodevitaRound2** with **270 rank** among **1lakh+ participants** | Link.
- In Trwizardthon Hackathon,**From 1300+ teams** and **5200+ students** across **28+ states**, we soared into the **Top 25 Finalists** | Link.
- Made it to the **Top 10 out of 300+ teams** at **AI Manthan 2025** Hackathon hosted by **IIIT Delhi** | Link.
- **Oracle Cloud Infrastructure** 2025 **Certified DevOps** Link & **Data Science Professional** Link.