

JAPPANJOT KAUR

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Experience

Celebal Technologies | Data Science Intern

(Jun 2025 – Aug 2025)

- Build NetCortex, a real-time network security pipeline with deep packet inspection, TLS SNI extraction, and six unsupervised ML models (Isolation Forest, KDE, LOF, One-Class SVM, HBOS, Autoencoder), optimized to process **5,000+ packets/sec with sub-10ms latency**.
- Designed an AI-driven cyber-analytics dashboard using Flask-SocketIO and Chart.js with WebSocket streaming, enabling real-time threat scoring, hostname resolution, zero-day detection workflows, and automated forensic PCAP logging.

India Meteorological Department, New Delhi | AI/ML Intern

(July 2024 - Aug 2024)

- Analyzed **3+ years** of meteorological and crop-stress data and built *Mausam Fasal Sathi*, a multilingual AI chatbot delivering district-level weather insights to **500,000+ farmers**, improving advisory accessibility by **40%**.
- Enhanced the chatbot's NLP pipeline using Hugging Face Transformers and LLaMA-2, increasing engagement by **25%** across Hindi, Punjabi, and English users.

Key Projects

AlzCare – A Smart Assistance System for Daily Activities in Alzheimer's Patients



(April 2025 - May 2025)

- Implemented a real-time human activity detection mobile application using MediaPipe Pose + CNN-LSTM, achieving 92%+ recognition accuracy and triggering instant SMS/email alerts for falls or anomalies via workflow automation, reducing emergency response time by 60%.
- Built an interactive UI with live activity tracking, journaling, cognitive mind games, and caregiver notifications, lowering supervision burden and enabling non-intrusive, cost-effective in-home Alzheimer's care.

Real-Time Object Detection using YOLO Variants with Nature-Inspired Algorithm



(Feb 2025 - Apr 2025)

- Engineered an AI-based object detection compiler integrating YOLOv8, YOLOv11, and YOLO-World with hybrid PSO-GWO optimization, achieving 93.2% mAP@0.5 and 185+ FPS real-time performance on Pascal VOC.
- Enhanced localization accuracy using dual-stage refinement (Canny edge detection + SIFT keypoints), reducing bounding box localization error to 3.10 px and achieving 98.44% computational complexity reduction.

Misinformation Mitigation in Social Networks via Graph-Theoretic Interventions



(Jan 2025 - Apr 2025)

- Pioneered a scalable misinformation mitigation framework using ICM on the OGBN-Arxiv dataset (169K+ nodes, 1.1M+ edges), simulating misinformation diffusion and evaluating ten strategic edge/node blocking interventions.
- Proposed a hybrid IEED + community detection approach and soft blocking method, achieving a 95%+ reduction in misinformation spread, lowering the average infection rate from 29.9% to 1.38%, with structural integrity preserved for real-time social networks.

Research Work

- "Real-Time Object Detection using YOLO Variants with Nature-Inspired Algorithm" — Accepted for publication in **Iran Journal of Computer Science (Springer Nature)**.
- "News Under the Lens of Time: Causal Signals and Concept Drift on a Language Manifold" — Accepted under **Track 1: Computational Technologies at IEEE International Conference ICSFT-26**.

Skills

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

Machine Learning & Data Science: Scikit-Learn, Pandas, NumPy, OpenCV, TensorFlow, PyTorch, Keras, PySpark, Altair AI Studio, NLP, Transformers, LLMs, Langchain

Frameworks & Development: Flask, Django, REST APIs, WebSockets, MediaPipe, Bootstrap, Tailwind CSS, Kivy

Cloud Platforms & Systems: AWS (EC2, DynamoDB), Linux, Version Control (Git/GitHub)

Educational Credentials

Amity University Punjab, Mohali

2022 - Present

- B.Tech Computer Science and Engineering | CGPA: **8.42**, SGPA: **9.09** (6th Sem)

Relevant Coursework: Machine Learning, Deep Learning, Computer Vision, Data Mining, DSA, OS, Discrete Mathematics, Statistical Methods, OOP, Theory of Computation, Computer Networks, DBMS, COA, Matlab

Pratap Public School, India

- Class XII - 89% (2021 - 2022) Class X - 93.33% (2019 - 2020)

Scholastic Achievements

- Built Leadlinker – an AI-powered LinkedIn Sales Automation tool at The AI Hiring Show by Rabbitt Learning (2025).
- Semi-Finalist – Flipkart GRID 7.0, Early Careers Program 2025
- Finalist, HackOrbit 2025 at MITS Gwalior — recognized for innovation in a 36-hour national hackathon.
- Earned LeetCode 50 Days Badge and 100 Days Badge for consistent problem-solving.
- Kaggle Community Competitor badge for a data science competition in April 2025.
- Completed LeetCode's Pandas track — earned the "Introduction to Pandas" badge (Jan 2025).
- Ranked 14,087 (97.25 percentile) in Round 1 & 5,106 in Round 2 (Data & AI) of Naukri Campus Young Turks 2024.
- Special Mention in Altair® Data Science Contest for predictive modeling using RapidMiner (Sep 2024).
- Mind Maze Escapade at Cognizance, IIT Roorkee — Secured 3rd place and won a ₹5000 cash prize (Mar 2024).
- 3rd Position, Ideathon: Resolve to Solve by AUP, Mohali (June 2023).
- 3rd Position – Code S.O.S Coding Competition at AUP Mohali, June 2023
- Recognized as Budding Innovators in the Venture Vault event by AUP, Mohali (May 2023).
- 2nd Prize – CyberGlyphics 2023, AUP Mohali, for designing a cybersecurity-themed comic using Adobe Photoshop.
- 2nd Prize, Technovation by AUP, Mohali (Nov 2022).

Value-Added Courses

- **Data Analytics Job Simulation** | Deloitte Australia (Forage)
- **Data Science & Analytics—HP LIFE Online Course** | HP Foundation
- **Generative AI Explained** | NVIDIA
- **Augment Your LLM Using Retrieval Augmented Generation** | NVIDIA
- **Machine Learning and AI with Python** (HarvardX • CS109xa) | edX
- **Foundations of Project Management**, Google | Coursera