Harshwardhan Fartale

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Work Experience

DRDO & (IISC) Indian Institute of Science, Bangalore ⬈

Predoc Associate
July 2024 - Present

- Developed Machine Learning (ML) systems for CASDIC's (Combat Aircraft Systems Development & Integration Centre) combat aircraft applications
- Evaluated fine-tuned **IBM Granite** & **Gemma** models for SciML using custom Graph-RAG pipeline, achieving SOTA accuracy on benchmark datasets
- Lead Open Source Projects **PULSE** & **SciREX** at **AiREX (AI for Research and Engineering eXcellence)** lab under **Professor Sashikumaar Ganesan**

Bajaj Finserv Health ⬈

Data Scientist
Jan 2024 - June 2024

- Designed and implemented a high-performance statistical model for fraudulent transaction prediction, achieving the **highest** abuse detection rate
- Spearheaded end-to-end development of a fraud detection pipeline using graph database technologies (**Memgraph, Neo4j, Cypher**)

OpenMined ⬈

Open Source Technical Writer
Jan 2023 - June 2023

- Collaborated with the writing team to improve existing user documentation and beginner tutorials in **differential privacy**
- Published blog posts and articles about federated learning and privacy-preserving machine learning resulting in increased product adoption.

IIT Indore ⬈

Machine Learning Intern
June 2023 - July 2023

- Developed ML models predicting stock prices using Python, achieving **85%** accuracy. Incorporated news and market data to improve forecasts.
- Implemented time series analysis and feature engineering, boosting model accuracy by **25%** & enabling data-driven decision making

Key Projects

AIFred - Secure, Local AI Coding Assistant ⬈

Product
March 2025 – Present

- Launched **AIFred**: a desktop coding assistant with real-time AI, **100% data privacy** via **local AI pipeline** (**Ollama** for LLM, **NVIDIA NeMo** for ASR).
- Empowered developers with seamless **voice command interface** using accurate, **entirely on-device** speech recognition for secure, offline querying.
- Optimized for low-latency by architecting a fully local AI pipeline for rapid, on-machine coding assistance without cloud round-trips.
- Delivered an intuitive UX with an always-accessible **Electron** overlay UI, minimizing context switching and integrating AI into the coding workflow.
- **Core Technologies**: Python (FastAPI, NeMo, pydub), JavaScript (Electron), Ollama API.

Document Tampering Detection using YOLOV8 ⬈

Self Project

- Developed a comprehensive forgery detection system with YOLOV8 to identify and classify fraudulent alterations such as **overwriting, scribbling**, and **whitener** use, alongside building an extensive dataset of over 600 document images to train the model for accurate manipulation detection.
- Designed a **Streamlit-based** UI facilitating intuitive document uploads, visualize tampering & analyze detailed results of digital forgery assessments.
- **Technologies used**: Python, Streamlit, OpenCV, YOLO

Fundus AI ⬈

Guide - Dr. Amit Kaul

- Developed a complete solution to detect eye & systemic diseaes such as **Diabetic & Hypertensive Retionpathy**, **Cataract**, **Glaucoma**, **ARMD**.
- Developed deep learning smartphone app for efficient ophthalmic disease screening utilizing device camera for accessible healthcare.
- Designed **3D-printed** smartphone accessory using **Tinkercad** that captures high-quality fundus images compatible with all smartphones & app.
- **Technologies used:** Python, Keras, Tensorflow, Flutter, Tinkercad

Skills

Programming Languages	Python, C++, SQL
ML & Deep Learning Tools	NumPy, pandas, Matplotlib, Scikit-learn, JAX, spaCy, OpenCV, TensorFlow, PyTorch, PySyft
Large Language Models	Huggingface, Ollama
Graph Databases & Query Languages	Neo4j, Memgraph, Cypher
Tools & Platforms	Docker, Kubernetes, LaTeX, MATLAB, Linux Kernel, Google Cloud Platform, Firebase, Adobe Illustrator
Technical Writing	Substack, Medium, Hashnode

Education

National Institute of Technology, Hamirpur
CGPI – 8.56

B.Tech in Electrical Engineering
Dec 2020 – May 2024

Positions of Responsibility

Machine Learning & Data Science Trainer
For DRDO Scientists

DRDO Industry Academia Centres of Excellence (DIA-CoEs)
January 2025