Harshwardhan Fartale

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Work Experience

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

Predoc Associate   *July 2024 - February 2025*

- Developed comprehensive 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 a developed 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 among all models
- Spearheaded the end-to-end development of a fraud detection pipeline using graph database technologies (**Memgraph, Neo4j, Cypher**), after evaluating 10+ platforms.

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**
- Active technical writer and contributor, publishing 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

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** web interface facilitating intuitive document uploads, enabling users to visualize tampering and analyze detailed results of digital forgery assessments.

Fundus AI ⧉

Guide - Dr. Amit Kaul

- Developed a Complete end-to-end solution to detect eye as well as systemic diseaes such as **Diabetic Retionpathy**, **Cataract**, **Glaucoma**, **ARMD**, **Hypertensive Retinopathy**
- Developed deep learning smartphone app for efficient ophthalmic disease screening utilizing device camera for accessible healthcare
- Designed **3D-printed** smartphone accessory using **Tinkercad** for capturing high-quality fundus imaging compatible with all smartphones and the application
- **Technologies used:** Python, Keras, Tensorflow, Flutter, Tinkercad

Skills

Programming Languages	Python, C++, SQL, Solidity
ML & Deep Learning Tools	NumPy, pandas, Matplotlib, Scikit-learn, JAX, spaCy, OpenCV, TensorFlow, PyTorch, PySyft
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*

Secretary   *NIT Hamirpur*

Hult Prize 2023 NIT Hamirpur   *Oct 2022 - March 2023*

Cloud Facilitator   *NIT Hamirpur*

Google Developer Students' Club   *June 2021 - Dec 2022*