

Harshwardhan Fartale

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Work Experience

DRDO & (IISC) Indian Institute of Science, Bangalore

Predoc Associate

July 2024 - Present

- 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

AlFred - Secure, Local AI Coding Assistant

Product

March 2025 - Present

- Launched **AlFred**, a desktop coding assistant enhancing developer productivity with real-time AI support, while guaranteeing **100% data privacy** through a unique, fully **local AI pipeline** (**Ollama** for LLM, **NVIDIA NeMo** for ASR).
- Empowered developers with a seamless **voice command interface**, featuring accurate, private speech recognition processed **entirely on-device** for secure, offline querying.
- Optimized for low-latency interaction by architecting the fully local AI pipeline, ensuring rapid coding assistance directly on the user's machine without cloud round-trips.
- Delivered an intuitive user experience via an always-accessible **Electron** overlay UI, minimizing context switching and integrating AI support directly 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** web interface facilitating intuitive document uploads, enabling users to visualize tampering and analyze detailed results of digital forgery assessments.
- Technologies used:** Python, Streamlit, OpenCV, YOLO

Fundus AI

Guide - Dr. Amit Kaul

- Developed a Complete end-to-end solution to detect eye as well as systemic diseases 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

Large Language Models

Huggingface, Ollama, LLM Inference

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 B.Tech in Electrical Engineering	<i>CGPI – 8.56</i> <i>Dec 2020 – May 2024</i>
Yashoda High School and Junior College HSC – Higher Secondary Education	<i>Percentage – 80%</i> <i>May 2017 – May 2019</i>
Somalwar High School, Ramdaspeth SSC – Secondary School Certificate	<i>Percentage – 96.4%</i> <i>Apr 2014 – Apr 2017</i>

Positions of Responsibility

Machine Learning & Data Science Trainer DRDO Industry Academia Centres of Excellence (DIA-CoEs)	<i>For DRDO Scientists</i> <i>January 2025</i>
Secretary Hult Prize 2023 NIT Hamirpur	<i>NIT Hamirpur</i> <i>Oct 2022 - March 2023</i>
Cloud Facilitator Google Developer Students’ Club	<i>NIT Hamirpur</i> <i>June 2021 - Dec 2022</i>