

Vishesh Yadav

Seoni, Madhya Pradesh 480661

+91 9131211680 ✉ sciencely98@gmail.com [in linkedin.com/in/vishesh/](https://www.linkedin.com/in/vishesh/) github.com/vishesh9131/

Experience

Indian Institute of Science (IISc), Bengaluru - DRDO Project

August 2025 - Present

Data Scientist

- Built a sequence Transformer for radar pulse deinterleaving that maps Pulse Descriptor Word (PDW) trains to per-pulse embeddings using a pre-LayerNorm, multi-head self-attention encoder (d_model=256, 8 layers, 8 heads, FFN=2048, embed_dim=8) optimized for emitter separation.
- Owned the metric-learning and clustering pipeline: per-train normalization, ToA-ordered trains of up to 1,000 pulses and 2-20 emitters, batch-all/batch-hard/semi-hard triplet loss, and per-train HDBSCAN evaluation with AMI, ARI, NMI, and V-measure; a protocol fix raised median ARI from approximately 0.36 to 0.575.
- Scaled research with multi-GPU Distributed Data Parallel, 100k-train synthetic PDW corpora, streaming HDF5 loaders, and DRDO ETF transfer/fine-tuning; benchmarked sequential LSTM/BiLSTM and pointwise tabular baselines to measure representation impact on deinterleaving and tracking.
- Validated Stage-2 temporal deinterleaving for co-frequency emitters using PRI and Time-of-Arrival structure, including SDIF-style methods and GRU sequence models; measured roughly 0.91 accuracy at 10 percent delta-PRI with approximately 200 PRI cycles.
- Implemented and benchmarked multi-emitter trackers in a unified CLI, including centroid matching, adaptive Joseph-form Kalman filters, LSTM centroid prediction, pointwise neural embeddings, and DeepSORT-style association with MOT-style metrics such as IDF1, ID switches, purity, ARI, and NMI.
- Trained Transformer, BiLSTM, and TCN sequence classifiers on TSRD ETF streams of approximately 8M rows and 100+ emitter classes using sliding windows, class-weighted loss, validation splits, confusion matrices, and reproducible evaluation reports.
- Extended the CAESAR framework with PDW feature engineering, HWBF/ETF adapters, model and loss registries, clustering backends, ClearML experiment tracking, Docker/Type runners, and pytest coverage across CLI, clustering, representation, and data-adaptor modules.

Open Source Contribution

[Apple/AxLearn](#) – Apple's Modular Deep Learning Research Framework | Python, JAX, AQT, C++

Nov 2024

- Contributed to AxLearn, Apple's research-oriented deep learning framework built on JAX and Flax.
- Improved AQT test coverage and resolved critical issues, strengthening low-precision training workflows.
- Updated quantized-operation test suites and collaborated with core maintainers on pull-request review and merging.

[Apple/IntraLanguageInterfaces](#) – Interfaces for using code from one language in another | Python, JAX, AQT

Jun 2024

- Contributed to Apple ML Engineers' open-source project, collaborating with industry experts to enhance machine learning infrastructure and tools.
- Developed and optimized core components, resulting in improved model performance and streamlined deployment workflows.
- Collaborated with Apple Staff to enhance the pr : [link](#)

Technical Skills

- **Programming Languages:** C++, Matlab, Python, Java, SQL, R
- **LLM Application :** LangChain, VLLM, RAG
- **System & DevOps:** Docker, Kubernetes, Git, CI/CD Pipelines
- **Deep Learning Compilers & Frameworks :** JAX, Pallas, Flax, PyTorch, pytorch_geometric, TensorFlow, AxLearn, Keras, MXNet, Maxtext
- **Data Analytics & Visualization:** Pandas, Numpy, Matplotlib, PowerBI
- **Pair Coding IDEs :** Cursor* , Antigravity, VS Code, Claude Cowork, Codex
- **Parallel Computing & Hardware:** Distributed Data Parallel (DDP), NVIDIA A6000 GPUs, Parallel Sequence Processing

Projects

[Corerec](#) | Python, C, Tensorflow, Keras, MXNet, Hadoop, Numpy, Pandas

Apr 2024

- Developed an open-source recommendation framework supporting deep learning, graph-based,

and sequence-based models. (30,000+ downloads)

- Built high-performance architectural components (DNG Scoring, Scoreformer) leveraging Transformer architectures.
- Engineered the backend to support heavy parallel processing and large-scale embeddings suitable for production environments.
- Open-source project available at: <http://corerec.online>

Aware | Multi-agent LLM orchestration, structured tool-calling, workspace indexing

Nov 2023

- Built an agentic IDE where a Captain model coordinates specialist workers on a visual graph, with explicit dispatch and multi-turn tool loops so agents read the repo, edit files, and run commands instead of only chatting.
- Designed a structured tool-calling protocol (fenced JSON tool blocks) for file I/O, repo exploration (list/read/grep), terminal execution, and in-app preview, reducing free-form hallucination on real disk paths.
- Implemented retrieval-style grounding by combining on-disk project context (tree + targeted file reads, session manifest) with codebase indexing so orchestration prompts stay aligned with the actual repository state.

VISH - Versatile Interpretive Syntax Handler | Python, Tensorflow, Keras, Numpy, Pandas

Nov 2023

- Built a Transformer-based NLP model specifically for syntactic interpretation and pattern mapping.
- Leveraged self-attention mechanisms to compute context-aware token representations.
- Parallel Execution: Enabled flexible modeling of diverse syntactic structures through parallel sequence processing, maximizing computational efficiency.
- Deployed Project Link : <https://vishgpt.streamlit.app/>

Achievements

- Awarded **Academic Topper** at Lovely Professional University's **12th Convocation** for achieving the highest cumulative academic performance across the graduating cohort. [Rank list](#)
- Achieved **30,000+ downloads** for a custom-built recommendation engine framework with support for deep learning and graph-based models. [ranking card](#)
- Ranked #5 Product of the Day on [Product Hunt](#) for oioi, a lightweight macOS clipboard overlay.
- Improved model accuracy and stability in **Apple's** internal **AxLearn** framework by contributing to quantize testing modules and fixing core SSM evaluation flows. [PR Thread](#)
- Second Runner up in **Group Discussion** conducted by Thought Theater of University (OCT 2023).

Certificates

NVIDIA Information Security Awareness

February 2025

Nvidia — [Certificate Link](#)

NVIDIA Data Privacy Training

February 2025

Nvidia — [Certificate Link](#)

NVIDIA State Of Art Deep Learning 101

February 2025

Nvidia — [Certificate Link](#)

IBM Certified Deployment Professional - Security Network Protection (XGS) V5.2

February 2025

IBM — [Certificate Link](#)

IBM Machine Learning with Python

February 2025

IBM — [Certificate Link](#)

IBM Accelerating Deep Learning With GPUs

February 2025

IBM — [Certificate Link](#)

Education

Lovely Professional University Punjab

2023 - 2025

Masters of Computer Application hons. ML — CGPA: 9.2 (Topper 2025)

Jalandhar, Punjab

SECT Computers

2021 - 2022

Diploma in Computer Applications – CGPA: 7.5

Seoni, Madhya Pradesh

D.P Chhaturvadi College

2019 - 2022

Bsc Mathematics — CGPA: 8.8

Seoni, Madhya Pradesh