

Mohansree Vijayakumar

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SUMMARY

AI engineer with around 16 months of hands-on work shipping machine learning and GenAI systems: RAG pipelines on FAISS, fine-tuning and error analysis on classification models, recommender systems, and FastAPI services that put a model in front of real users. Currently the engineering half of a two-person AI team, building an agentic system on the OpenAI and Gemini APIs. Four merged pull requests to Kornia, a PyTorch computer vision library, including a gradient bug open since 2021. MSc Artificial Intelligence, University of Surrey, completed February 2026.

TECHNICAL EXPERTISE

- **Languages & Libraries:** Python, SQL, TypeScript, Node.js, PyTorch, TensorFlow, scikit-learn, pandas, NumPy, OpenCV.
- **Machine Learning & Deep Learning:** NLP, transformers, BERT/BioBERT, computer vision (YOLO, ResNet, CLIP), GANs, graph neural networks, recommenders, time series, Bayesian deep learning, SHAP.
- **Generative AI:** OpenAI, Gemini and Claude APIs, RAG with FAISS and pgvector, prompt engineering, structured output validation, tool calling, n8n, Zapier, Make.
- **Engineering & MLOps:** FastAPI, Django, React, Docker, AWS (Lambda, S3), CI/CD, pytest, MLflow, Optuna, Git, Redis, Streamlit.

PROFESSIONAL EXPERIENCE

AI Automation Trainer | Workforce Training & Development | London, UK | Jun 2026 – Present

- Building the organisation's first agentic GenAI system, wiring LLM APIs (OpenAI, Google Gemini) into market-research tooling so that research done by hand now runs as a pipeline.
- Work as the engineering half of a two-person AI team reporting to the CEO, mentoring one intern on Python and LLM integration work.
- Deliver the Level 4 AI & Automation Practitioner apprenticeship and contribute to the Level 5 AI Leadership programme, teaching n8n, Zapier, Make and ChatGPT to business owners and directors.

AI Developer (part-time, alongside MSc) | Guardian AI | Remote | Oct 2025 – Jan 2026

- Designed and built the NLP system behind a consumer fraud-detection assistant: a user pastes or screenshots a suspicious message and gets back an assessment of whether it looks fraudulent.
- Built the RAG pipeline end to end on FAISS – chunking, embedding, indexing and retrieval tuning – grounding answers in known scam patterns rather than guesswork.
- Fine-tuned the classification model and ran error analysis on misclassified cases, fixing over-confident answers by redesigning the prompt and schema. Served the model into client systems through FastAPI microservices.

Machine Learning Engineer Intern | Soft4Hire | Chennai, India | Mar 2024 – Nov 2024

- Built a hybrid recommender combining LightFM collaborative filtering with TF-IDF and BERT content embeddings, raising engagement 40% in a live A/B test against the baseline.
- Cut cold-start failures by 60% by adding a content-based fallback for users and items with no interaction history.
- Deployed the service on AWS Lambda and S3 in Docker, holding inference under 200ms, in an Agile team with code review.

OPEN SOURCE CONTRIBUTIONS

Kornia (github.com/kornia/kornia) — differentiable computer vision library for PyTorch, ~10k stars.

- Fixed issue #1396, open since 2021: restored autograd through Boxes3D.to_tensor, diagnosing the long-standing gradcheck failure as a false positive at a non-smooth point rather than a wrong gradient (PR #4184, merged).
- Four merged PRs in total, all maintainer-reviewed — also a float16 underflow in distance_transform and a quota apportionment bug in MultiResolutionDetector.

EDUCATION

MSc Artificial Intelligence | University of Surrey | 2025 – Feb 2026

- **Dissertation (Distinction, published):** Hybrid Deep Learning and Graph Neural Networks for Alzheimer's Disease Prediction using scRNA-seq Data.
- **Modules:** Deep Learning, Natural Language Processing, Computer Vision, Machine Learning.

B.Tech Artificial Intelligence & Data Science | Anna University | First Class | 2021 – 2024

- **Modules:** Machine Learning, Deep Learning, Numerical Methods, Statistical Analysis, Data Analytics.

PROJECT HIGHLIGHTS

Multi-Agent Sourcing & Matching Agent (GitHub): FastAPI service using Gemini and OpenAI with tool calling to parse unstructured profiles into ranked matches.

Bayesian Deep Learning for Probabilistic Forecasting (GitHub): LSTM and Transformer baselines against Pyro variational inference and MC Dropout, scored on calibration as well as error. Optuna, MLflow, Docker.

Token Classification on Biomedical Text (GitHub): BioBERT fine-tuned on PLOD-CW-25, F1 0.84 held out.

ACHIEVEMENTS

Two published papers (GNNs + SHAP; GANs) | Runner-up, Synapse AI Hackathon | Distinction (90%) AR/VR coursework, Surrey

CERTIFICATIONS

Python for Data Science | Fundamentals of Data Science | R Programming for Statistical Computing