Nadir Najeeb Kassim

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AI Engineer with experience building and deploying scalable ML and GenAI solutions. Skilled in **Python**, **PyTorch**, **TensorFlow**, and **cloud platforms**. Focused on delivering practical AI systems for real-world impact.

Education

Nanyang Technological University **Aug 2024 – Present**
Master of Science in Artificial Intelligence, GPA 4.2/5 *Singapore*

Vellore Institute of Technology **Aug 2019 – Apr 2023**
BTech in Electrical and Electronics Engineering, GPA 8.5/10 *Vellore, India*

Relevant Coursework: Large Language Models, Statistics, Deep learning, Time series analysis, Computer Vision, Artificial intelligence, Fuzzy systems, Natural Language Processing.

Experience

Research Intern **Dec 2022 – Jun 2023**
Neuronics Lab, Indian Institute of Science *Bangalore, India*

- **ULP-ACE**: Built an ultra-low-power acoustic event classifier for edge devices using ARM Cortex-M4 processors, enabling autonomous detection of bird species through an AI-based TinyML model.
  - The classification model consumed only 5.5 mW and 49 KB flash memory, supporting real-time inference.
  - Achieved 8 m detection range, with the device operating continuously for 60 days on just 2 AAA batteries.
  - Captured and logged audio events with timestamps and geolocation data for ecological monitoring; integrated with the ThingsBoard dashboard for real-time visualization and remote access.
- **LoRa Communication**: Implemented a LoRaWAN communication framework for low-power embedded devices at 868 MHz, using UART for serial communication with the LoRa transceiver; achieved reliable data transmission over distances up to 2 km in obstructed environments.

Projects

Credit Card Fraud Detection System | *PySpark, Scikit-learn, MLOPs, FastAPI* **Oct 2024**
- Developed an end-to-end fraud detection pipeline in PySpark with class imbalance handling and real-time scoring.
- Trained Logistic Regression, Random Forest, and XGBoost **(AUC 0.996)** using stratified sampling and SMOTE.
- Deployed a production ready **FastAPI** service with **CI/CD**, **MLflow** tracking, and **DVC** for data/version control.

Revamping Mobile Net V3 on segmentation task | *Computer vision, MobileNet, Regularization* **Feb 2025**
- Enhanced MobileNetV3 for facial segmentation task on a small dataset of 5000 images.
- Improved **F1 Score** by **17.4%** and **IoU** by **21.9%** via architectural and training refinements.
- Applied Mish activation, LRASPP decoder, and regularization to enhance edge detail and generalization on CelebA-HQ.

Agent–Driven Hybrid Recommender System | *LLM, AI-Agents, RAG, MySQL* **March 2025**
- Designed a hybrid recommendation engine combining LLM and content-based filtering and MySQL for user history.
- Enhanced agent performance using **Program-of-Thought prompting** and **RAG** on MovieLens 32M dataset.
- Attained **Top-5 precision of 0.76, recall of 0.54,** and **NDCG of 0.81** .
- Demonstrated customer-centric model behavior, offering insight into preference modeling and personalization strategies.

RAG based Low-level CodeGen for QP problems | *C, RAG, Convex optimization solvers* **April 2025**
- Developed a generative AI framework that generates QP problems in C from corresponding python code.
- Compiled a benchmark suite of 30+ QP problems including Lasso, SVM, Huber regression and Portfolio Optimization.
- Achieved **93% accuracy (28/30)** using **RAG** pipeline and different types of prompting methods.

Technical Skills

Languages: Python, C/C++, SQL
Libraries & Developer Tools: Linux, PyTorch, TensorFlow, NumPy, Git, FastAPI
Data & visualization : PySpark, Spark, Matplotlib, Seaborn.
Cloud & DevOps: AWS, MLOps, Git, Docker, CI/CD, MLflow, DVC

Certifications / Extracurricular

- **GenAI intensive course**, Google Apri1 2025
- **Head of electrical department**, Team Celerity Dec 2022