



THEENDRAL MAGUDAPATHI

DATA SCIENTIST - RAG · LLMs · Computer Vision · Edge AI · Agentic AI

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Education

SRM Institute of Science and Technology | **M.Sc. Applied Data Science** | CGPA: 9.0

Sep 2021 - Apr 2023

Ethiraj College for Women | **B.Sc. Mathematics with Computer Applications** | CGPA: 8.2

June 2018 - June 2021

Work Experience

 DataTracks Pvt. Ltd., *Ramanujan Intellion, Chennai*

Dec 2025 - Present

Data Scientist - Agentic AI Developer

Fine-Tuning LLMs, PEFT (Parameter Efficient Fine-Tuning), LoRA (Low-Rank Adaptation), QLoRA, Ollama, BERT, Context Retrieval agentic AI, multi-agent orchestration, MCP, and scalable enterprise AI systems for (SEC) Filings.

 Smartan FitTech Pvt. Ltd., *Chennai*

Feb 2025 - Dec 2025

AI Engineer - Computer Vision

Vision Recognition Systems - LSTM, Transformers, PyTorch, Mask Auto Encoders, System Design, RAG, LLM, NLP, CUDA, Docker, FastAPI, Postman, VectorDB, FAISS, SQLite Database, RLHF, SFT, ChromaDB, LangChain, Streamlit, ONNX, GPU Optimization

 XYMA Analytics, *IIT Madras Research Park, Chennai*

Nov 2023 - Jan 2025

Data Scientist *Developing Safety System for Industrial Environments Integrating Thermal and RGB Cameras with NVIDIA Kit*

- I directed a project focused on developing an innovative product that integrates **thermal and RGB cameras** with a **Nvidia Jetson Orin Nano Developer Kit** running on **Linux OS**. Utilizing cutting-edge **YOLO** technology and the creation of models for **Personal Protective Equipment (PPE)** detection.
- Additionally, leveraging the thermal camera and Raspberry Pi to develop a model that **extracts key environmental data** such as **minimum, maximum, and average temperatures**. This model continuously monitors the environment and triggers alerts upon **detecting anomalies**, capturing specific environment images and **transmitting them to the IoT team using base64 encoding**.
- Furthermore, implemented a thermal model capable of **estimating human body temperature** by **segmentation** directly from the thermal data and **segmentation of heat asset** to provide alerts. Moreover, designed an **intrusion zone model** giving **90% accuracy** that effectively **detects human presence in restricted areas** using inputs from both the **thermal and CCTV cameras**, issuing timely warnings/alerts as needed.
- As a key member, **Collaborated with the designing team** for the design and development of the product. Additionally, I provide **leadership and mentorship to a team of five interns**, guiding them through project tasks and ensuring project **milestones are met efficiently**.


Data Analyst *Optimization of Sensor Data Analysis from Signal Processing*

- Led a team of interns in processing and **analyzing time series temperature data collected from IoT devices**, manufactured by the company
- Utilized advanced data analysis techniques including **EDA and noise reduction** methods such as **Fast Fourier Transforms, Decomposition Methods, and Finite Impulse Response** to enhance data quality.
- Implemented **signal smoothing techniques** including **Savitzky-Golay filters, Simple Exponential, and Infinite Impulse Response** to improve data clarity.

Deep Learning Intern

June 2023 - Nov 2023

- Developed **Generative Adversarial Networks (GANs)** and **Conditional CGANs (CGANs)** using **PyTorch** for both **1D and 2D data**, achieving impressive **accuracies of 90% and 70%** respectively for **Ultrasonic sensors** (Manufactured by the company)
- Implemented **Physics Informed Neural Networks (PINNs)** in heat transfer research product | Skills: **Deep learning and Neural Networks**
- Implemented **tailored convolutional layers, transpose convolutional layers, and activation function** for Generator and Discriminator models, including utilization of **U-Net architectures for image generation**.
- Addressed **mode collapse** issues during training

 Futaucon Tek Private Limited, *IIT Madras Research Park, Chennai*

Dec 2022 - May 2023

Python Backend Developer Intern

- Been a part of working on backend of the **CAD product development** and UI Integration using **Python and OCC(Open Cascade) Technology**.
- Successfully created **10 modules** using Python from scratch for **CAD product**. These modules were designed to improve code organization and promote code reuse with **Object-oriented programming**. Utilized my expertise in Python programming to develop clean and reusable code, ensuring high-quality deliverables

Technical Stack

- **Programming:** Python, SQL
- **Data Analysis and Manipulation:** Pandas, Numpy, Matplotlib, EDA(Exploratory Data Analysis), Missigno, Scipy, Seaborn
- **Deep Learning Frameworks:** Pytorch, Tensorflow
- **Source Code Editors and Version Control:** Visual Studio Code, Pycharm, Google Colab, Git
- **GPU Computing:** PyTorch CUDA, ONNX Runtime (GPU), NVIDIA DeepStream, cuDNN, NVIDIA TensorRT, CUDA
- **Generative Models:** GANs(Generative Adversarial Networks), CycleGAN, Gen AI, LLM, RAG
- **Edge Devices:** Jetson Orin Nano (Ubuntu), Raspberrypi, Nuc, Latte Panda
- **Data Visualization and Monitoring:** Tableau, PowerBI, Grafana, KNIME
- **Other Libraries and Concepts:** OCC(Open Cascade Technology), CNN, RNN, Langchain, Ollama, LLM, Machine Learning Algorithms, Roboflow, Streamlit, OOPs(Object oriented Programming), Transfer Learning, Resnet, Unet

Projects ([Github](#))

- **Neural Operator Simulator** [Project Link](#)
A Web based Heat Simulations on a 2D Plane. This AI Model was built on **DeepXDE** which simulates a heat distribution from a hotspot based on Heat Equations on a plane surface depending on the material
- **Skin Health Classifier** [Project Link](#)
Completed a skin classification project achieving an **accuracy of 80%**. The project effectively categorizes skin types based on specific criteria.
- **Reverse Image Search (Flask Project)** [Project Link](#)
This project is a simple Reverse Image Search engine built with Flask. It allows users to upload an image and find visually similar images from a predefined image database.
- **RAG with AI Agent Financial** [Project Link](#)
Lightweight RAG (Retrieval-Augmented Generation) using a local LLM (Ollama + tinyllama + Mistral), a simple vector store, and a Streamlit UI. This RAG system parse data from HTML files, Vector DB Embedding store, FAISS, Cosine Similarity Search.
- **NCERT RAG-based QA System** [Project Link](#)
This project integrates **LangChain**, **Qdrant vector store**, **Dockerized LLM** backend using **Ollama**, and PDF data pipelines to deliver accurate and contextual answers to academic questions.
- **ToothType Segmentation Model** [Project Link](#)
Presently engaged in image segmentation, focusing on tooth type classification. Utilizing **YOLO technology**, **Roboflow**, and **PyTorch**, XML and JSON Labels Formatting. This approach enables accurate segmentation of teeth and teeth disorders based on their types.
- **hmcalt - Human-Centered Math for Python (Python Library)** [Project Link](#)
Python is excellent at performing raw calculations. hmcalt excels at contextualizing those numbers for human decision-making. hmcalt bridges the gap between machine precision and human intent. It provides opinionated, safe, human-semantic math primitives for everyday decisions in analytics, business logic, monitoring, experiments, and reports.

Certifications

- **Supervised Machine Learning: Regression and Classification** by **DeepLearning.AI & Stanford University** taught by **Andrew NG**
- **Data Analysis with R Programming** by **Google** offered by **Coursera**
- **Cleared the Assessment** for the skill **SQL(Basic)** - on **HackerRank**
- **Cleared the Ethical Hacking Assessment**
- **Physics Informed Neural Networks (PINNS)** from **Udemy**
- **Databases and SQL for Data Science with Python** by **Coursera** On Progress

Awards and Recognitions

Centum Scorer - Awarded for passing the public examination with a centum score in **Math**

Aug 2016

Extracurricular Activity

- Play a key role by actively participated in **recruitment process** onboarding students by **handling interviews and training them for data science roles**
- Podcast on **“Understanding Role of AI Engineer at Startups”**