

# MOHAMMED SINAN

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AI/Data Engineer | Medical AI | Machine Learning • Kottakkal, Kerala, India

## SUMMARY

AI/Data Engineer owning the end-to-end machine learning lifecycle for Medical AI: MRI dataset preparation, deep learning model training in PyTorch, GPU training on Google Cloud Platform, and deployment as FastAPI services inside Hospital Information System (HIS) and Hospital ERP products.

## SKILLS

- Programming & Libraries:** Python, SQL, JavaScript, NumPy, Pandas, OpenCV, scikit-learn
- AI/ML & Deep Learning:** PyTorch, TensorFlow, Hugging Face Transformers, PEFT/LoRA, CNNs, Vision Transformers, Fine-Tuning, Model Deployment
- Medical AI:** MRI Processing, DICOM/NIfTI (pydicom, nibabel), Medical Image Segmentation and Classification, Stroke Detection, nnU-Net, Swin Transformer, MedGemma
- Computer Vision:** Semantic Segmentation, Object Detection (YOLO), Image Preprocessing, Data Augmentation
- Data Engineering:** Data Preprocessing, Dataset Preparation, Data Validation, Medical Imaging Data Pipelines
- Cloud & GPU:** Google Cloud Platform, Vertex AI, Compute Engine, Cloud SQL, GPU Training, Model Serving
- Backend & Databases:** FastAPI, REST APIs, Node.js, Microservices, PostgreSQL, Neo4j
- Tools:** Git, Docker, Linux, Google Colab, Jupyter Notebook, React

## WORK EXPERIENCE

AI / Data Engineer

December 2025 – Present

Curanova.ai – Healthcare Technology and Medical AI

Kerala, India

- Own the end-to-end deep learning workflow for stroke detection on brain MRI: dataset preparation, training, hyperparameter tuning, validation, and inference with nnU-Net and Swin Transformer in PyTorch.
- Engineer the MRI data pipeline: DICOM and NIfTI handling with pydicom and nibabel, preprocessing, dataset organization, and case integrity validation across imaging sequences.
- Fine-tune MedGemma with Hugging Face Transformers and LoRA to produce structured medical report drafts from imaging outputs for clinician review.
- Optimize YOLO object detection models for real-time computer vision, running annotation workflows, train and validation splits, and hyperparameter tuning cycles.
- Orchestrate GPU training and model serving on Google Cloud Platform using Vertex AI, Compute Engine, and Cloud SQL, and configure on-premise GPU training for privacy-sensitive patient data.
- Deploy models behind FastAPI services integrated into the Hospital Information System (HIS) and Hospital ERP, collaborating with developers and healthcare professionals to ship AI features into clinical workflows.

## PROJECTS

Stroke Detection from Brain MRI | Medical Imaging

Curanova.ai

Tech: Python, PyTorch, nnU-Net, Swin Transformer, FastAPI, Google Cloud Platform

- Designed an end-to-end stroke detection pipeline integrating MRI preprocessing, nnU-Net lesion segmentation, Swin Transformer classification, and FastAPI deployment for automated inference.
- Validated each stage independently and ran training on cloud and on-premise GPUs, keeping the flow reproducible from raw study to prediction.

Medical Report Generation | Vision-Language Model

Curanova.ai

Tech: MedGemma, Hugging Face Transformers, PEFT/LoRA, PyTorch

- Fine-tuned the MedGemma vision-language model on medical imaging data to draft structured reports from model findings, giving clinicians an editable starting point.
- Applied parameter-efficient fine-tuning with LoRA and iterated on output structure to keep generated reports template-consistent.

AI-Powered Hospital Information System | Healthcare AI

Curanova.ai

Tech: FastAPI, Python, PostgreSQL, React

- Integrated an AI chatbot and AI transcription service into clinical workflows, streamlining documentation and patient record lookup for hospital staff.
- Exposed each AI capability as a REST endpoint over PostgreSQL, keeping model services decoupled from core HIS and ERP modules.

Fuel Drive-Off Detection | Computer Vision

Curanova.ai

Tech: YOLO, Python, PyTorch, OpenCV

- Built a YOLO detection system for fuel drive-off events, assembling and annotating a custom surveillance-image dataset for training.
- Tuned annotation quality, class balance, and detection thresholds across training runs to improve reliability on live camera feeds.

## EDUCATION

| Year        | Degree                                   | Institute                                                                                               | CGPA       |
|-------------|------------------------------------------|---------------------------------------------------------------------------------------------------------|------------|
| 2021 – 2025 | B.Tech, Computer Science and Engineering | MES College of Engineering, Kuttippuram<br>Affiliated to APJ Abdul Kalam Technological University (KTU) | 7.0 / 10.0 |

## LANGUAGES

- English:** Professional Working Proficiency    **Malayalam:** Native