

# Deepak Thirukkumaran

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 LinkedIn |  GitHub |  Portfolio

## Education

**Shiv Nadar University, Chennai**  
*B.Tech, Artificial Intelligence & Data Science*

**2021 – 2025**  
*CGPA: 7.683*

## Experience

**ORCA Digital Lean Solutions**, *Contract – AI/ML Software Engineer*

**Michigan, USA**  
*Nov 2025 – Present*

- KPI optimization framework for manufacturing: multi-tenant FastAPI backend with PostgreSQL, calculation engine for weighted scoring and cost-efficiency optimization, and budget-constrained action plan generation using greedy algorithms. 7 internal tools shipped.

**CreatorOS by DRPCRD**, *AI Engineer Intern*

**London, England**  
*Jan 2025 – Jul 2025*

- Full-stack demographic and profanity detection platform for Instagram/TikTok using PaddleOCR, OpenCV, and custom NLP pipelines.
- Creator pricing prediction model with A/B testing and statistical validation, +15% campaign ROI. FastAPI, pgvector, Docker, GitHub Actions CI/CD.

**IIT Hyderabad**, *Research Intern*

**Hyderabad, India**  
*May 2024 – Sep 2024*

- VirConvNet: multimodal 3D object detection framework (LiDAR + RGB) with Stochastic Voxel Discard and NRConv, reducing voxel density by 90% and 2× inference speedup.
- SE blocks and Pointwise Spatial Attention for detection robustness, +3.42% on KITTI 3D AP (Moderate) over Voxel-RCNN baseline.

**Tata Consultancy Services (TCS)**, *Computer Vision Intern*

**Chennai, India**  
*May 2023 – Jul 2023*

- YOLOv8 computer vision pipeline with OCR integration for P&ID symbol classification, 95%+ accuracy. Deployed as Dockerized Streamlit app for industrial inspections.

**Sports Mechanics**, *Data Analyst Intern*

**Chennai, India**  
*Dec 2023 – Feb 2024*

- Worked with tools for Player performance prediction and talent evaluation. AI-powered commentary generation (Mistral-7B quantized), live match notifications via OneSignal API, milestone tracking.


## Projects

**MedFusion: Vision-Language Framework for Radiology**  | *CV, LLMs, Healthcare*

- Multimodal radiology VQA and report generation system combining ConvNeXt, fine-tuned CLIP (ViT-32B), and Med-LLaMA with residual feature fusion. 76.3% accuracy on SLAKE, 72.8% on PMC-VQA benchmarks.

**Fintech Intelligence Pipeline**  | *LLMs, Fintech, Full-Stack*

- AI-powered stock analysis platform with live market data (Polygon.io), LLaMA 3.2 sentiment/risk analysis, and automated investment insights. Deployed with Flask APIs, React dashboard, PostgreSQL, and Railway CI/CD.

**HITL Curriculum Generator**  | *n8n, Ollama/Mistral, Docker, Webhooks*

- Automated curriculum generation pipeline using Ollama/Mistral with constrained prompts for structured JSON output mapped to competency standards. Async human-in-the-loop approval gate via webhooks. Dockerized for Railway.

**MiniGPT: Transformer Language Model from Scratch**  | *Deep Learning, Transformers, NLP*

- 22M parameter GPT implementation: token embeddings, multi-head self-attention, positional encoding, feed-forward layers. Training, generation, and top-k/nucleus sampling. 40 perplexity on WikiText-2.

**SAP Component Extraction Tool**  | *Python, FastAPI, Regex, React*

- Automated extraction from unstructured SAP schedule files using regex pattern matching. Multi-file upload with cumulative quantity aggregation by custom date filters. Deployed on Railway with Excel export functionality.

## Skills

**Core ML/AI:** Computer Vision, NLP, LLMs (LLaMA, Qwen, Mistral), Multimodal Systems, RAG, Agentic AI, RLHF



**Frameworks & Tools:** PyTorch, OpenCV, PaddleOCR, LangChain, HuggingFace, n8n, Ollama

**Backend:** Python, FastAPI, Flask, PostgreSQL, pgvector, SQLAlchemy

**Frontend:** React, TypeScript, Tailwind CSS, Recharts, ReactFlow

**Infrastructure:** Docker, AWS, Azure, GCP, GitHub Actions CI/CD, Railway, Vercel

## Certifications

IBM AI Developer  | IBM Rag and Agentic AI  | AWS AI Practitioner 