Butchi Venkatesh Adari

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Education

Worcester Polytechnic Institute *Aug 2023 - May 2025*
Masters in Robotics Engineering - GPA: 3.8/4.0 *(Expected)*

Anil Neerukonda Institute of Technology and Sciences *July 2017 - May 2021*
Bachelors in Computer Science and Engineering - GPA: 7.77/10

Experience

Graduate Researcher *Worcester, Massachusetts*
ELPIS LAB | Worcester Polytechnic Institute *Aug 2023 - Present*

- Optimized Apple's Depth-Pro model for monocular depth estimation, reducing error from 10 cm to 3-4 cm.
- Engineered a Grasp Transformer to predict grasp poses from RGB images and monocular depth, validated in PyBullet simulation for UR10 robot integration.

Machine Learning Engineer *Hyderabad, India*
Tata Consultancy Services *July 2021 - June 2023*

- Designed a computer vision pipeline using YOLOv5, OCR and Google Vertex AI, integrating multi-camera feeds through Pub/Sub to achieve 91% detection accuracy.
- Automated document processing system with custom OCR models and BigQuery integration, reducing workflow processing time by 30% across multiple clients.

Projects

Research Paper Analysis System with RAG Architecture and MLOps *Oct 2024 - Dec 2024*

- Built a Research Paper Analysis System using RAG and LLMs, achieving sub-second query responses with FAISS and Flan-T5.
- Deployed MLOps pipeline using FastAPI, Docker, CI/CD and Google Cloud Vertex AI; achieved average query response time of 1.3 seconds on CPU for high-volume data processing tasks.

Real-Time Customer Support Chatbot | LLM, NLP, CI/CD, AWS SageMaker *Aug 2024 - Sep 2024*

- Developed a Large Language Model Chatbot for customer support, delivering real-time responses with 95% accuracy.
- Built CI/CD pipeline for AWS SageMaker, enabling continuous model improvements and version control.

Image Captioning with Vision Transformer and GPT-2 | ViT, NLP *May 2024 - Jun 2024*

- Created an image captioning model combining Vision Transformer and GPT-2, generating captions with 90% relevance.
- Automated deployment on AWS and Hugging Face using CI/CD pipelines, achieving real-time caption generation.

High-Fidelity 3D Scene Reconstruction Using NeRF | Computer Vision *Mar 2024 - Apr 2024*

- Reconstructed photorealistic 3D scenes from 2D images using neural radiance fields, improving rendering accuracy.

Tesla Vision | Deep Learning, Computer Vision *Jan 2024 - Feb 2024*

- Designed a 3D visualization pipeline inspired by Tesla's autonomous dashboard, integrating YOLO3D, CLRERNet, and ZoeDepth for vehicle detection and lane recognition.
- Simulated interactive 3D scene in Blender, incorporating motion visualization and collision prediction.

Indoor Robot Navigation | Motion Planning, Perception *Sep 2023 - Dec 2023*

- Evaluated traditional algorithms (RRT, RRT*) and reinforcement learning strategies for indoor robot navigation in habitat environments.

Technical Skills

Frameworks: PyTorch, TensorFlow, Hugging Face, Scikit-learn, LangChain, OpenCV, FastAPI

Languages/Programming: Python, C++, Java, C, SQL

Infrastructure: Docker, Kubernetes, MLflow, DVC, Git, Github, Version Control, Prometheus

Platforms: AWS SageMaker, GCP Vertex AI, Azure ML, Linux, VS Code, ROS

Communication: Technical Documentation, Cross-functional Collaboration, Technical Presentations

Certifications/Courses

IIT Guwahati: PG Certification of AI & ML

Coursera: Neural Networks and Deep Learning by Andrew Ng, Deep Learning Specialisation.

Microsoft: End-to-end machine learning operations (MLOps) with Azure Machine Learning.