Butchi Venkatesh Adari

Worcester, Massachusetts badari@wpi.edu +1 774 670 7192 github.com/VenkateshRoshan
linkedin.com/in/abven venkateshroshan.github.io

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 for real-time object search using Google Vertex AI, achieving 91% accuracy in object detection.
- Automated document processing by fine-tuning custom OCR models, improving text extraction accuracy from complex layouts by 25%.
- Streamlined data processing workflows for Proximus and Vodafone, reducing processing times by 30% through machine learning pipelines.

Machine Learning Intern *India*
Inmovidu *June 2019 - Aug 2019*

- Analyzed Titanic survivor data using Exploratory Data Analysis (EDA), identifying Random Forest as the optimal algorithm with minimal false discovery.

Projects

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

- Built an end-to-end Research Paper Analysis System using RAG and LLMs, achieving sub-second query responses with FAISS and Flan-T5.
- Deployed a robust MLOps pipeline utilizing FastAPI, Docker, and Google Cloud Vertex AI; achieved an impressive average query response time of 1.3 seconds on CPU for high-volume data processing tasks.
- Automated CI/CD workflows with GitHub Actions and GCP service accounts, enabling seamless deployment.

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

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

Image Captioning with Vision Transformer and GPT-2 | AWS, ViT, NLP, CI/CD *Aug 2024 - Sep 2024*

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

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

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

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

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

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

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

Self-Driving Car | Deep Learning, Computer Vision *Jan 2021 - May 2021*

- Customized a detection model for Raspberry Pi 4, enabling real-time identification of traffic signs and pedestrians with 94% accuracy.
- Integrated the model into a miniature vehicle for autonomous navigation in controlled environments.

Technical Skills

ML/DL Frameworks: PyTorch, TensorFlow, Hugging Face, Scikit-learn, LangChain, OpenCV

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

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

Cloud Platforms: AWS SageMaker, GCP Vertex AI, Azure ML

Developer Tools: VS Code, Android Studio, Firebase, MySQL, Blender, Linux, Gradio, FastAPI, 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.