

VINAY LANKA

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Education

University of Maryland

Expected: May 2025

Master of Engineering (M.Eng.) - Robotics

College Park, MD

- GPA - 4.0
- Coursework: Multi-Modal Models, Deep Learning, Perception, Localization, Path Planning, Multi-Agent Systems

Vellore Institute of Technology

Sep 2017 - Jun 2021

B. Tech - Electronics and Communication Engineering

Vellore, TN

- GPA - 8.83/10
- Technical Lead of the IEEE VIT Student Chapter

Experience

Parsons

Jun 2024 - Present

Computer Vision Intern

Denver, CO/ Remote

- Developed 3D reconstruction pipelines (SFM, NeRF, Gaussian Splatting) on UAV surveys for Federal projects.
- Built Parsnip, an IR-RGB image-matching tool via homography and EXIF data with annotations, reducing inspection time.
- Set up the Clearpath Husky A200 robot for Autonomous Outdoor Navigation for the Geophysics team.

Gamma Lab, University of Maryland

Jan 2024 - Jun 2024

Graduate Research Assistant

College Park, MD

- Implemented Contrastive Self Supervised models for Video Recognition using the SlowFast framework and benchmarked against various backends (MoCo, BYOL, SwAV, etc)
- Worked on the Perception models (crosswalk detection, sidewalk navigation) for the Clearpath Husky robot for social navigation using Camera, 3D LIDAR, IMU, and GPS data.

Newspace Research and Technologies

Jan 2023 - July 2023

Robotics Engineer

Bangalore, IN

- Developed real-time UAV image projection, orthorectification, and orthomapping pipelines for fixed-wing drone swarms.
- Developed standardized pipelines for UAV video feeds multiplexed with flight data using MISB 0601 KLV standard.
- Successfully Integrated Epsilon E175 EO/IR camera on VTOL prototype, testing object tracking and geolocation.

Neoflux (Part of TI DMG GmbH)

July 2021 - December 2022

R&D Robotics and IoT Engineer

Bangalore, IN

- Built a custom Autonomous 3D Mapping Robot with GPS RTK, EKF, custom path-planning algorithms for precise navigation.
- Developed a multithreaded VOIP product with G711 encoding/encryption on Raspberry Pi CM4 for Protection One (Client).
- Developed a set of internal Robotics, Edge ML, and IoT projects for Neoflux (R&D TIDMG GmbH)

Projects

Point Cloud MultiModal Masked Autoencoding (ObitoNet) | *PyTorch, Python*

Dec 2024

- ObitoNet takes in Masked PointClouds, outputs reconstructed point clouds, and recovers missing details or sparse data using the masked autoencoder design and is multimodal, using cross-attention to fuse Image and Point Cloud Tokens.

Reinforcement Learning Meets Visual Odometry | *PyTorch, Open AI Gym, Python*

Dec 2024

- Devised and developed a novel particle filter approach to localize drones and provide odometry (position) measurement predictions using visual image encodings (CNN, VecKM, and histogram of feature encodings) as measurements.

Visual Particle Filtering (CamDroneLoc) | *PyTorch, OpenCV, Gazebo, PX4, Python*

May 2024

- Devised and developed a novel particle filter approach to localize drones and provide odometry (position) measurement predictions using visual image encodings (CNN, VecKM, and histogram of feature encodings) as measurements.

HDAL: Human Detection and Localization | *C++, OpenCV, CMake*

October 2023

- Built a perception system for mobile robots to accurately track human positions in real-time using a YOLO v5 model using Geometric CV methods.

Publications

V. Lanka, A. Thapliyal, S. Bhaskaran, "ObitoNet: Multimodal High-Resolution Point Cloud Reconstruction" arXiv:2412.18775

V. Lanka, V. B. D. Vinjamuri and B. Bhattacharyya, "Designing and Implementing Robot-Web-Suite, A Cloud Based Robotics Platform," 2021 IEEE RAAICON, doi: 10.1109/RAAICON54709.2021.9929637.

Technical Skills

Languages: C, C++, Python, GoLang, JavaScript

Frameworks / Platforms: PyTorch, Tensorflow, Keras, CUDA, OpenCV, Open3D, OpenAI Gym

Software/Tools: ROS1/2, Gazebo, IssacSim, CMake, Git, CI/CD, GoogleTest, Docker, Kubernetes, SolidWorks