Vinay Lanka

vlanka@umd.edu | Website | LinkedIn | GitHub | YouTube | Medium

Education

University of Maryland **Expected: May 2025**

Master of Engineering (M.Eng.) - Robotics *College Park, MD*

- Coursework - Software Development for Robotics, Robot Modelling, Control for Robotic 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

Newspace Research and Technologies **Jan 2023 – July 2023**

Robotics Engineer *Bangalore, IN*

- Developed solutions for image projection, and orthorectification of UAV feeds onto a map. Developed an end-to-end near real-time image stitching pipeline integrated with the fixed-wing swarming stack.
- Develop a standardized pipeline for accessing aerial camera feeds with metadata in simulation following the MISB 0601 KLV standard.
- Successfully integrated the Epsilon E175 EO/IR camera with a prototype VTOL and tested object tracking and geolocating algorithms.

Neoflux (Part of TI DMG GmbH) **July 2021 – December 2022**

R&D Robotics and IoT Engineer *Bangalore, IN*

- Protection One (Client) - Developed MVP and production-grade multithreaded VOIP products with G711 alaw encoding and encryption based on the Raspberry Pi CM4 module. Designed a carrier board with suitable audio recording, processing, and playback components.
- Autonomous Land Mapping Robot - Developed a fully autonomous exploration robot to map an unknown area in 3D. Designed the chassis, electronics, and custom algorithms for navigation. Implemented 2-stage EKF (local and global) with RTK GPS for precise position estimates.
- Developed a set of internal reference projects, and blogs for Neoflux (Previously R&D THIS IS! DMG GmbH) in the domains of Robotics, Edge ML, and IoT.

Projects

EV Charging Bot | *ROS2, Python, OpenCV, PCL, Velocity Kinematics* **December 2023**

- Developed an EV Charging Bot based on the FANUC CRX-10iA/L cobot that can dock to a charger using a Stereo camera based perception system.
- The perception system generates a goal in 3D space from a video feed and an velocity IK based solver designed from scratch generates and executes a real-time trajectory using the SRI Jacobian inverse method using Damped Least Squares.

HDAL: Human Detection and Localization | *C++, OpenCV, CMake* **October 2023**

- Designed and deployed a geometric computer vision algorithm that uses intrinsic camera parameters and pixel information from bounding box information detected using a YOLO v5 model to get accuracy levels greater than 95% for calculated human coordinates relative to the robot's camera.

Disturbance Compensating Model Predictive Control | *Quadratic Optimization* **November 2023**

- Wrote a comprehensive report and implemented the paper by Z. Li and J. Sun, "Disturbance Compensating Model Predictive Control With Application to Ship Heading Control"

Robot Web Suite | *ROS 1, MoveIt, Javascript* **October 2020**

- Implemented an industry ready robotic arm controller that controls any robotic in real-time remotely through a webapp. The webapp uses roslibjs to connect to a custom Moveit package. Wrote custom ROS Control Hardware Interfaces and designed and fabricated a 6DOF Arm as a proof of concept.

Publications

V. Lanka, V. B, D. Vinjamuri and B. Bhattacharyya, "Designing and Implementing Robot-Web-Suite, A Cloud Based Robotics Platform," 2021 IEEE International Conference on Robotics, Automation, Artificial-Intelligence and Internet-of-Things (RAAICON), Dhaka, Bangladesh, 2021, pp. 46-49, doi: 10.1109/RAAICON54709.2021.9929637.

Technical Skills

Languages: C, C++, Python, GoLang, JavaScript, Embedded C
Frameworks / Platforms: Tensorflow, OpenCV, NodeJS, ESP-IDF, Raspberry Pi, Jetson Nano, Arduino, ESP32
Software/Tools: ROS2, ROS1, Gazebo, CMake, Git, GoogleTest, Docker, Kubernetes, SolidWorks