Uday Girish Maradana

Links: Github LinkedIn Website GScholar

umaradana@wpi.edu,udaygirishm@gmail.com

+1-(508)4107729, Worcester, MA-01609

Education

- **MS in Robotics Engineering** — *Worcester, MA (USA)*
  Worcester Polytechnic Institute , GPA: 3.67 — *Aug 2023 – May 2025 (Exp)*
  Courses: *Robot Control, Robot Dynamics, Motion Planning, Computer Vision, Swarm Intelligence, Reinforcement Learning*
- **PG Diploma in AI and ML** — *Online, India*
  University of Hyderabad — *Mar 2021 – Mar 2022*
  Courses: *Data Science Modelling, Machine Learning, Advanced ML, Deep Learning*
- **B.Tech Mechanical Engineering** — *Kerala, India*
  National Institute of Technology, Calicut — *Jun.2015 – May.2019*
  Courses: *Intro to Robotics, Control Systems, Neural Networks, Image Processing, Fuzzy Logic*

Skills

- **Languages**: Python, C, C++, Rust, SQL, HTML, R
- **Softwares/Frameworks/ Technologies**: Cloud Computing(GCP, AWS,Azure), CV, NLP, RL, LLMs, MLOps, DevOps, Robotics, Edge Computing, Speech Tech, Network Security, Quantum Computing, Databases, Microservices, Tensorflow, OpenCV, Scikit-Learn, Pytorch, CUDA, cuDNN, ROS, Deepstream, Jetson*, TensorRT, Triton, Matlab, Unity, Blender,Octave, Arduino, Edge Devices, GitHub, Jenkins, ARM, Gazebo, Gym,COMSOL,SolidWorks

Publications/ Research

- Uday Girish, M et.al."RIGGU: A Semi-humanoid Robot Platform for Speech and Image Recognition" in Intelligent Systems, Technologies and Applications, 2020 Paper Video.
- Aniket Patil, Mandeep Singh,Uday Girish Maradana,Nitin J. Sanket "MinNav : Minimalist Navigation Using Optical Flow For Active Tiny Aerial Robots" - (Ongoing Extension) Website Video.

Work Experience

- **SDS Intern - Johnson & Johnson** — *(Jun 2024- Present),USA*
  - Developing LLM Pipelines for helping different teams across to understand and gain insights from Medical Trials.
- **Graduate Researcher - ELPIS Lab** — *(Jan 2024- Present),USA*
  - Working on improving Robot Grasping Pipelines and Embodied AI. **Advisor:** Prof. Constantinos Chamzas.
- **Graduate Researcher - Perception and Autonomous Robotics Group** — *(Aug 2023 - Feb 2024),USA*
  - Worked on improving current optical flow pipeline for Aerial vehicles to detect unknown scenarios and able to navigate using optical flow. **Advisor:** Prof.Nitin J Sanket
- **Machine Learning Engineer (Sr.Engineer) - Tiger Analytics** — *(Jan 2022 - Jul 2023), India*
  - Assisted organization in obtaining Google Cloud ML Specialization certification by gathering proof and delivering a 4-hour technical presentation on their behalf.
  - Led a team of 3 ML Engineers in creating an End-to-End retrainable MLOps pipeline with AWS.
  - Led a team of 4 ML Engineers in orchestrating and automating the training and inference pipeline deployment for a Price Elasticity Model using MLOps principles on GCP.
  - Contributed to the MLOps team in developing a Real-time Scalable and Automated Pipeline for Anomaly Detection in Authentication systems within the field of Cybersecurity.
- **Freelance ML Engineer/Data Scientist** — *(Aug 2021 - Jan 2022), India*
  - Developed a News Recommendation system Pipeline on Vertex AI for CodeRythm Technologies.
  - Developed components for the Information extraction platform for a Legal AI product at DeepJudge.
  - Analyzed data from a Retail Fashion Business client at Aays Analytics, constructing a pipeline for Automated Scheduling and inventory management using ML Modelling.
  - Developed an ML-based API at Applied Computing for Virtual KYC automation, utilizing Cloud Text extraction APIs, OpenCV, and NLP libraries to identify keywords.
- **Machine Learning Engineer II - New Space Research Technologies** — *(Feb 2021 - Jul 2021), India*
  - Developed a Deep learning-based Targeting and Navigation platform utilizing feature matching algorithms like Superpoint, LoFTR, and SuperGlue.
  - Led the exploration of shifting the current inference platform from Raspberry Pi to CUDA-based platforms to enhance platform inference speed in the Platform Shift project.

- **Machine Learning Engineer - Quantiphi Analytics Solutions** *(May 2019 - Feb 2021), India*
  - Contributed to the Solutions Research & POC Team, enhancing the firm's capabilities in Hybrid deployment scenarios. Projects involved analyzing Television videos with Google Cloud AI-based APIs for character/sentiment impact on viewership, creating an AI-based Gym Assistant, and managing Web Page and Doc Translations using Google APIs and a Custom Open Source Deep learning approaches.
  - Developed a scalable package for NLP related tasks to deploy and benchmark performances of Roberta,OpenGPT-2,Longformer.
  - Implemented a CV pipeline for Person Re-Identification and security, integrating DL concepts like Object Detection, Tracking, Person Re-identification, and Image Search using FAISS and Elastic Search.
  - Developed a Computer Vision pipeline for safety in parks and resorts, incorporating deep learning concepts such as Object Detection, Tracking, and Pose Estimation and deployed using TensorRT/Triton.
- **Machine Learning Intern - Storilabs System Technologies** *(Jun 2018-Oct 2018),India*
  - Implemented a Computer Vision pipeline for real-time Object Search, enabling the identification, live tracking, and historical tracking of objects across multiple locations.

Projects

- **DQN for Quadrotor - Airsim**: Classroom project on RL aims to make a quadrotor learn avoiding obstacles.
- **Visual Inertial Odometry**: Classroom Project on CV aims to build Classical and DL based VIO piepline.
- **Einstein-Vision**: Classroom Project on CV aims to build different components of a Autonomous Vehicles Perception Stack using open source models and render the scene outputs in Blender.
- **SfM and NeRF**: Classroom Project on CV aims to build traditional Structure from motion pipeline from scratch and comparing with the latest deep learning variants such as Neural radiance fields.
- **Panorama Stitching**: Classroom Project on CV aims to stitch images by using Traditional methods and DL (Supervised and Unsupervised homography - Spatial Transformer and DLT) based methods.
- **3 Link Manipulator Analysis**: Evaluation of a 3 link planar manipulator Kinematics and Dynamics to understand specifications and recommend actuators such that it can execute certain trajectories.
- **Indoor Robot Navigation**: Evaluation of Traditional algorithms such as RRT, RRT* with Reinforcement learning based end to end action based methods for Indoor Robot navigation in Habitat Environment.
- **Alien Catcher**: Evaluation and implementation of different control algorithms such as PID, LQR for catching unidentifed flying objects in flying space with a quadrotor in simulation.
- **Computer Vision for Movement measurement in Ultrasound Videos**: Research on Traditional and Deep Learning based Optical flow methods to track key particles movement in Ultrasound Medical videos.
- **Knee Arthroscopy Surgery Tool powered by CV**: Using Computer vision and Traditional Image processing to get a real-world transformation of the measurement made in an Image. Using Detectron2 for Segmentation and Traditional CV + Shortest distance-based approaches for Contour Detection and matching.
- **Autonomous Bot-v1 using DL and ROS**: Development of an Autonomous bot using ROS, Object Detection, Lane Detection, and path planning using Jetson Nano, RPI4 with a night vision capability.
- **Auto Ticket Generation using Real time Transcription**: Developed a Workflow that can integrate with the current Call Center AI and enable Auto ticket generation with real-time speech-to-text transcription, NLP.
- **Anonymization tool for Surgical Videos**: Developed a Web UI using streamlit powered by ML backend, which supports multiple model integrations to anonymize different objects in a video.
- **Multi Class Image Classification with Deployment**: Tuned different SOTA models, developed a few custom CNN architectures for Multi-class Image classification on the Cdiscount dataset (5k Classes).
- **Knee Rehabilitation System**: Fabrication of a device with a 2 DOF mechanism which can be used for performing Flexo-extension exercises which can be used for Knee rehabilitation purposes.
- **RIGGU V2-The Semi Humanoid**: A complete framework for developing an Interactive Semi-Humanoid Robot using technologies like CV, NLP, ROS, and SLAM.
- **Quadcopter,Hexacopter**: Autonomous Quadcopter based on PixHawk Flight controller integrated with a Raspberry Pi. Hexacopter based on ARM and equipped with manual control and PID tuning was done for stability.
- **Robocon Bot-ABU Robocon 2017**: A manual robot that can throw disks at specified positions made by our Robotics Interest Group for Robocon-2017. I was involved in the development of thrust mechanics and control.

Certifications/Courses

- **Certifications**: GCP Professional ML Engineer, AWS ML Speciality, Tensorflow Developer Certificate, GCP Cloud Associate Engineer, AWS Associate Solutions Architect
- **Courses**: Master of Arts in Philosophy, Tensorflow Data Specialization, ML Specialization, DL Specialization, Robotics Software Engineer Nanodegree (Ongoing), Self Driving Nanodegree.