

VISHNU TRIPPATTA PISHARAM

+1 6028378633 • vpishara@asu.edu • linkedin.com/in/vishnu-t-p/

EDUCATION

M.S, Robotics and Autonomous Systems

Graduating Dec 2023

Arizona State University, Tempe, AZ

4.0 GPA

Relevant Coursework: Modeling and Control of Robots, Optimal Control, Perception in Robotics, Reinforcement Learning in Robotics, Applied Regression Analysis, Linear System Theory.

B.Tech, Electronics and Communication

2014-2018

National Institute of Technology Calicut, Kerala, India

3.5 GPA

TECHNICAL SKILLS

Tools: Simulink, Gazebo, Moveit, SolidWorks, Git, Ixia, Docker, PyQt, OpenCV, Jenkins

Programming : Python, Matlab, Linux, C, C++, R, Bash, Embedded Systems, Computer Vision

Frameworks: ROS/ROS2, TensorFlow, PyTorch, Scikit Learn

PROFESSIONAL EXPERIENCE

Neuro-Muscular Control and Robotics Lab, Tempe, AZ: Graduate Research Associate

Mar 2022 – Present

- Research on AI based Estimation of Gait Phase during walking to aid in lower limb assistive actuator design.
- System integration of real time human motion data capture system containing IMUs, Vicon cameras and force plates.
- Designed novel attention based autoencoders customized to subject and speed independent gait phase prediction.
- Implementing Variational Autoencoder based architecture and system for activity detection from real-time human data.

Yao Group: Nanoscale Optoelectronics Lab, ASU, AZ: Graduate Research Associate

Feb 2022 – May 2023

- Built the system for Polarimetric Imaging of CSP Collectors using a Drone with Sandia National Laboratories.
- Equipped drone with imaging system on Nvidia Jetson Nano to capture images in different lightings with automatic calibration.
- Developed an estimation algorithm using photogrammetry to accurately find drone position from noisy GPS data and images.
- Field tests of the complete system conducted at Sandia successful in field inspection of CSP Collectors with drones.(Paper)

Robotics Innovations Lab, Indian Institute of Science and Technology, India: Researcher

Mar 2021 – Nov 2021

- Designed vision system prototype to segment a group of people in a crowded indoor space using a depth camera.
- Performed dynamic obstacle avoidance in tight spaces using social LSTM based human trajectory prediction algorithm.
- Secured 5th place in Robothon Grand Challenge 2021 for autonomous vision-based E-waste segregation with robotic arm.
- Built a mobile manipulator that moves through indoor greenhouse, detects, segments and pluck the weed with precision.

Marvell Technology, Bangalore, India: Software Engineer

Jun 2018 – Sep 2020

- Led the software development life cycle of the Access Controlled List data plane software abstraction module for routers.
- Constructed the abstraction layers between SONIC and hardware which helped the company explore new customers.
- Designed a framework to run unit tests, design patterns and comprehensive hardware tests, reducing bugs filed by 68%.

ACADEMIC PROJECTS

Six-Legged Lunar Rover Gait Motion Planning and Navigation on uneven terrain

Spring 2022 – Fall 2022

- Built multi-terrain six-legged Lunar Rover and implemented Autonomous Navigation with body balance feedback control with a team of 4 undergraduates for the NASA Big-Idea Challenge 2022 and won the “Best System” Award.
- Developed safety-critical autonomous motion planning software including sensor fusion of TOF, camera and torque data.
- Engineered bird’s eye view module and vehicle pose estimation using 6 cameras. Obstacle detection using point clouds.
- The Hexapod autonomously navigates over uneven terrain with inclination between 0° to 45°. Live Demonstration at JPL.

Robot-based Intelligent Social Navigation of a Visually Impaired Person (IECON 2023 Accepted)

Spring 2021–Fall 2021

- Created an autonomous robot system using MISTY II to guide visually impaired individuals in social contexts.
- Rtab-Map SLAM along with semantic segmentation using SegNet to provide dynamic obstacle tracking and localization.
- Implemented adaptive PID control for follower-aware path planning of robot. RRT* modified for optimized trajectories.
- Prototyped and invented vibro-tactile-based direction indicator for enhanced guidance of visually challenged individuals.
- Conducted successful trial with blindfolded subject with average positional tracking error of 0.38m.

Distributed Multi-Robot Exploration in Unknown Environment with Decentralized Control

Spring 2021–Fall 2021

- An object-oriented design of multi-robot simulator with custom perception module for unknown environment mapping
- Developed novel map sharing with skewed ellipse fitting and modified levy walk based exploration strategy.

- Compared Non-linear MPC and potential gradient based PID control on dynamic obstacle avoidance.
- Obtained an average object finding accuracy of 97% for a system of 5 robots across an area of 100sq m.