TEJAS UDAY RANE

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EDUCATION

Worcester Polytechnic Institute (WPI), Worcester MA *Aug 2023 - May 2025*
MS Robotics Engineering
Relevant Coursework: Deep Learning, Reinforcement Learning, Computer Vision

Birla Institute of Technology and Science (BITS), Pilani, Goa Campus *Aug 2017 - May 2021*
BE Mechanical Engineering

TECHNICAL STRENGTHS

Programming Skills	ROS, ROS2, Python, C++, MATLAB
Libraries	OpenCV, PyTorch, OpenAI Gym, PyBullet, NumPy, PCL, Scikit-learn, etc.
Software	SolidWorks, AutoCAD, Fusion 360, Video editing
Other Skills	3D Printing, Robotic Systems development, Technical Writing and Presentation

RESEARCH EXPERIENCE

Manipulation and Environmental Robotics Lab, WPI, Worcester MA *Aug 2023 - present*
Graduate Student Researcher (Directed Research)

- **Waste Pile Rearrangement for Robotic Waste Sorting in Recycling Facilities:** Investigating the use of depth images and point clouds to effectively reconfigure waste piles on a conveyor belt using a robotic manipulator in order to uncover occluded and completely covered objects in the waste stream.

Biorobotics Lab, Carnegie Mellon University, Pittsburgh PA *Oct 2021 - April 2023*
Research Associate

- **RoboTRAC - Autonomous Vascular Access Robot for trauma care in resource-limited setting:** Conducted comparison studies for segmentation of ultrasound images using multiple deep learning frameworks to identify femoral blood vessels, to access them autonomously by performing robotic needle insertions.
- **Pipe Crawler - Autonomous Gas Pipe Repair:** Developed the entire software stack for control, navigation and localization of pipe crawler robot performing inspection and repair in gas pipes, using ROS2 and Python.

Robert Bosch Center for Cyber-Physical Systems, IISc Bangalore, India *June 2020 - August 2021*
Research Intern

- **Robust Quadrupedal Locomotion using Reinforcement Learning:** Implemented the Augmented Random Search (ARS) algorithm to train linear feedback policies for quadrupedal locomotion over rough terrain, and implemented on the custom-build quadruped StochLite, resulting in robot climbing over 15 degrees slopes.
- **StochLite - Quadrupedal Walking Robot:** Designed and fabricated a small, light-weight, and easy-to-modify quadruped which can be used for software development and can perform basic dexterous tasks like stair-climbing and traverse rough terrain, using 3D printing and off-the-shelf components.

Department of Electrical and Electronics Engineering, BITS Pilani, Goa, India *Jan 2019 - Dec 2019*
Academic Research Assistant

- **Modular Robotics:** Designed and fabricated two different modular robots, 3DoBot and 2DxoPod, to mimic locomotion strategies in vertebral animals.

PUBLICATIONS

- Sampada Acharya[†], Peter Roberts[†], **Tejas Rane**, *et al.* "Gecko Adhesion Based Sea Star Crawler Robot" *Frontiers in Robotics and AI, 2023* ([†] - authors sharing first authorship) (link)
- Cecilia G. Morales, Jason Yao, **Tejas Rane**, *et al.* "Reslicing Ultrasound Images for Data Augmentation and Vessel Reconstruction" *International Conference on Robotics and Automation (ICRA), 2023* (link)
- Abhimanyu, **Tejas Rane**, Rohan Godiyal, S. Sankhar Reddy Ch. "3DoBot - A Modular Robot for wheel and chain coordinate structures" *International Conference on Advances in Robotics (AIR), 2019* (link)
- S. Shankhar Reddy Ch., Abhimanyu, Rohan Godiyal, Tejas Zodage, **Tejas Rane**. "2DxoPod - A Modular Robot for Mimicking Locomotion in Vertebrates" *Journal of Intelligent and Robotic Systems - Springer Publications.* (link)