

VIVEK MANGE

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PROFESSIONAL EXPERIENCE

- University of Maryland, College Park, United States: Robotics Engineer** Jan 2025 - Present
- Established UAV communication using MAVLink messages and contributed to SPOT autonomy development using NAV2 for advanced navigation
 - Designed and enhanced GUI components, integrated API communication with the scoring server, and implemented Kalman filtering for casualty localization
 - Developed and optimized diagnostic systems for SPOT and UAVs, enabling performance monitoring
- University of Delaware, United States: Research Intern / Graduate Research Assistant** Jun 2023 - Dec 2024
- Developed an advanced nonlinear feedback controller for Aqua2's trajectory planning and visual-inertial navigation using OpenVINS for state estimation
 - Conducted simulations, underwater maneuver testing, and precise calibration of cameras and IMU sensors
 - Achieved state-of-the-art oyster detection using YOLOv10, reaching 0.657 mAP@50 with a maximum frequency of 9.1Hz.
- Swift Robotics, United Kingdom ([link](#)): Robotics Engineer** Sep 2022 - Jan 2023
- Developed a multi-sensor integration platform using LiDAR, depth cameras, and SLAM algorithms to enhance autonomous navigation, expanding the field of view by 50% and improving mapping accuracy by 40%
 - Optimized the software stack for single-board computers (SBCs) achieving a 30% increase in system performance and reduced inter-process communication latency by 45%
- Drishti Works Pvt LTD, India ([link](#)): Robotics Software Engineer** May 2020 - Aug 2022
- Enhanced hardware-software integration by applying advanced kinematic analysis and sensor fusion techniques, achieving a 50% increase in system reliability and a 40% reduction in testing downtime
 - Developed a comprehensive real-time diagnostic and documentation framework incorporating analytical metrics, improving debugging efficiency and leading to a 60% increase in robot deployment speed
 - Engineered an intuitive GUI for clients and developers, facilitating seamless real-time monitoring and updates. Modeled Autonomous Mobile Robots (AMRs) in Gazebo simulations, managed Over-The-Air (OTA) updates through AWS, leading to a 50% reduction in update deployment time

PUBLICATIONS

- ICRA : ODYSSEE: Oyster Detection Yielded by Sensor Systems on Edge Electronic ([link](#))
- IRJET : Autonomous Underwater Vehicle: Electronics and Software Implementation of the Proton AUV ([link](#))

PROJECTS

- Robot Navigation, University of Delaware ([link](#))** Aug 2023 - Dec 2023
- Implemented mine sweeper algorithm using OpenCV with HSV color scheme and pixel tracking for precise target engagement
 - Programmed wall following algorithm on a custom iRobot Create3 with realsense depth camera and a lidar
- ARM Robot Controller, University of Delaware ([link](#))** Feb 2023 - May 2023
- Formulated a trajectory planning controller for a 7DOF robotic arm (LBR iiwa 7R800, KUKA), ensuring 1mm accuracy in pose tracking
 - Categorized robotics concepts like Forward & Inverse Kinematics, Jacobian, Singularity, and joint limits
- The Marine Robotics Team (TMRT), India ([link](#))** Aug 2017 - Mar 2020
- Led a cross-functional team of over 30 engineers to ensure operational excellence and project milestones
 - Developed a Semi-Autonomous Underwater Vehicle (AUV) for the Singapore Underwater Robotics Challenge
 - Programmed a custom controller integrating low level sensors and PID tuning systems to ensure dynamic stability
 - Secured Top 30 positions in the 2018 and 2019 Singapore AUV Challenge through innovative design and execution

EDUCATION

- Master of Science in Robotics** Feb 2023 - May 2024
University of Delaware, Newark, DE
- Bachelor of Technology, Electronics and Telecommunication** Aug 2016 - Oct 2020
K.J. Somaiya College of Engineering, Mumbai, India

TECHNICAL SKILLS

Programming: Python, C++, MATLAB
Platforms: Linux, ROS, ROS2, Gazebo, SLAM, Computer Vision, PyTorch, Git, Docker, Jira, AWS
Equipment: ARM:Raspberry Pi, Odroid:Yu4,H3,H3+, Jetson:Nano,TX1/2,Xavier NX, Depth Cameras, Lidars

HONORS

- Project demonstration to Honorable Prime Minister of India Shri Narendra Modi
- TEDx speaker on marine robotics and its applications ([link](#))