

# Vaibhav Raheja

[✉ vaibhavreraheja@gmail.com](mailto:vaibhavreraheja@gmail.com) [📞 +1 \(217\) 2029970](tel:+1(217)2029970) [🔗 linkedin.com/in/Vaibhav-Raheja/](https://linkedin.com/in/Vaibhav-Raheja/) [🔗 Portfolio](#) [🔗 Vaibhav-Raheja](#)

## WORK EXPERIENCE

<b>EarthSense, Inc</b> <a href="#">🔗</a>	Aug 2024 – Present
<i>Robotics Integration Engineer / Project Lead</i>	Champaign, USA
<ul style="list-style-type: none"><li>Led Solarbot project as Project Lead and Hardware DRI, managing cross-functional integration of multiple autonomous robots and coordinating 8+ team members, by driving technical decisions for multi-sensor integration architecture and serving as <b>primary liaison between engineering, operations, and customer stakeholders</b>.</li><li>Enabled autonomous solar panel inspection capabilities by integrating Hesai LiDAR, SIYI PTZ cameras, and Seek thermal imaging systems across robotic platforms, achieving 95%+ system uptime through systematic ROS2 node development, hardware bring-up, sensor calibration, and end-to-end validation testing.</li><li>Maintained zero collision incidents across 2 distributed solar farm field sites by directing on-site deployment operations, troubleshooting hardware failures in real-time, and validating sensor performance under extreme conditions (43-46°C ambient temperatures) to ensure mission-critical operational reliability.</li><li>Reduced on-site personnel requirements for robot fleet management by developing an <b>AWS Kinesis WebRTC-based teleoperation system</b> POC with low-latency remote control and real-time video streaming.</li></ul>	
<b>Intelligent Motion Laboratory</b>	Aug 2023 – Dec 2023
<i>Robotics Research Developer</i>	Champaign, USA
<ul style="list-style-type: none"><li>Implemented advanced facial detection algorithms (FaceMesh) for <b>robotic eye examinations</b>, improving head pose estimation accuracy by 30%.</li><li>Designed a custom camera mount for a UR5 robotic arm, enhancing eye and head tracking precision by 20% with <b>ZED depth cameras</b>.</li></ul>	
<b>All India Institute of Medical Sciences (AIIMS) Hospital</b>	Feb 2021 – May 2023
<i>Robotics Research Assistant</i>	Mumbai, India
<ul style="list-style-type: none"><li>ICMR is the Indian equivalent of the <b>US National Institute of health</b>.</li><li>Developed a novel <b>robot-assisted intubation system</b>, enhancing procedural safety and efficiency, resulting in a 30% reduction in operator dependency during critical care intubation procedures.</li><li>Designed a <b>custom catheter and mouthpiece</b> integrated with a high-resolution camera, boosting patient safety and real-time visualization.</li></ul>	

## EDUCATION

<b>University of Illinois Urbana-Champaign</b>	Aug 2023 – Dec 2024
Master's of Engineering <b>Autonomy and Robotics</b> GPA: 3.66/4	Champaign, USA
<b>Mukesh Patel School of Technology Management &amp; Engineering</b>	Jul 2019 – Jun 2023
Bachelor of Technology in Computer Engineering GPA: 3.66/4	Mumbai, India

## PROJECTS

<b>Intelligent Ground Vehicle Competition (IGVC)</b>	
<i>Python, ROS, OpenCV, PID Control, Path Planning, CAD</i>	
<ul style="list-style-type: none"><li>Led a team as captain in an international robotics competition, developing SOCRATES 2.0 with a central drivetrain design achieving an average speed of 2.4 km/h.</li><li><b>Secured 2nd and 3rd place in Cyber and Auto-Nav Challenge</b> categories, implementing autonomous navigation with lane and object detection along with GPS Navigation, achieving over 95% navigation accuracy.</li></ul>	
<b>Benchmarking Control Algorithms for Unitree Go1 Robot</b> <a href="#">🔗</a>	
<i>Python, ISAAC Sim, Reinforcement learning</i>	
<ul style="list-style-type: none"><li>Implemented a benchmarking framework for evaluating Factory Controller and Reinforcement Learning (RL) algorithms on the Unitree Go1 robot, <b>improving adaptability and efficiency by 25% in varied terrains</b>.</li><li>Conducted performance analysis of "Walk These Ways" RL-based control algorithm, achieving a 30% improvement in velocity tracking and robustness over factory settings in challenging outdoor environments.</li></ul>	
<b>Autonomous Race Car</b> <a href="#">🔗</a>	
<i>Python, Path Planning, Vehicle Control, CARLA Simulator, PID Control</i>	
<ul style="list-style-type: none"><li>Integrated <b>path planning algorithms for autonomous navigation</b> on a Formula 1 racetrack in the CARLA simulator, utilizing Hybrid A*, Spline Interpolation, and BFS, achieving a maximum score of 92.4 on the Shanghai track.</li><li><b>Optimized a PID controller for steering and throttle</b>, leading to smoother trajectory following and a 25% reduction in lateral error during high-speed cornering maneuvers.</li></ul>	

## SKILLS

<b>Programming:</b> Python, C++, OpenCV, PyTorch, Machine Learning (ML), Convolutional Neural Networks (CNN)
<b>Robotics Frameworks and Tools:</b> Robot Operating System (ROS/ROS2), Gazebo, Path Planning, Vehicle Control, Reinforcement Learning, Control Algorithms, Simultaneous Localization and Mapping (SLAM), Docker
<b>Tools:</b> Autodesk Fusion 360, Computer-Aided Design (CAD), Linux, Git, Arduino, Raspberry Pi, 3D Printing