YASH SONI
Robotics Engineer| **Robotics Portfolio** | +1(585) 397-6492 | soni.yash.official@gmail.com |
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TECHNICAL SKILLS

- **Software & Tools:** Autodesk AutoCAD, Inventor, Fusion360, Proteus, ROS1/ROS2, SolidWorks, SQL, URScript, URCaps, MATLAB, Gazebo, Rviz, OpenCV, Microsoft Excel, Word, PowerPoint, Google Cloud, AWS, LabVIEW, Docker
- **Testing & Debugging:** Oscilloscopes, Spectrum Analyzers, Multimeters, Sensors, Control Systems Analysis
- **Microcontrollers & Development Boards:** Arduino, Raspberry Pi, NodeMCU, PLC Programming
- **Programming Languages:** Python, C++, Java, Go, C, JavaScript (React JS, Node JS, Angular)
- **Operating Systems:** Windows, Linux, MacOS
- **Project Management & Quality Control:** Version Control Systems, Agile Methodologies, Six Sigma, FMEA, SPC
- **Specialized Skills:** Motion Planning & Path Optimization, Machine Learning for Robotics, Digital Twin Simulations, Kinematics & Dynamics, Sensor Fusion, Control Algorithms, Human-Robot Interaction (HRI)

PROJECTS

- **MS Thesis – Within-a-Beat Vascular Resistance Control in a Mock Circulatory Loop *(NIH-funded project, 2024 – Ongoing)***
  - To enhance simulation performance and accuracy for cardiovascular simulators.
  - Designed an adaptive resistance control algorithm implemented on a custom-designed control valve with response time as low as 10 ms to respond within a heartbeat timeframe (~0.8s).
  - Improved simulation realism for medical testing, making it more effective for VAD development.
- **Zone-Following Roverbot using SLAM & DATMO *(2024)***
  - To develop a cost-effective solution to service animals and assist blind people in navigating through busy areas.
  - Designed an autonomous rover using SLAM and DATMO for real-time mapping and object tracking at nearly 95% lower cost.
  - Created a fully functional prototype requiring minimal to no user training, capable of autonomous navigation and object tracking with voice-based user alerts.
- ***Safe and Optimal Trajectory Planning for a UR5e Robotic Arm Using Multi-Objective Reinforcement Learning Framework(2025)***
  - Needed a robust method for safe trajectory planning in dynamic environments.
  - Developed a RL framework for a UR5e robot to reach targets while avoiding dynamic obstacles through the best path. Designed and implemented a hybrid learning model combining PPO, Constrained MDPs, and Fuzzy Movement Primitives in CoppeliaSim.
  - Achieved smooth, collision-free trajectories with improved stability and reduced value loss over training episodes.
- **ABU ROBOCON 2021 - All India Rank 16/100**
  - The problem statement was to design and manufacture a high-performance robot pair for complex competition tasks.
  - Designed, developed, and prototyped robots from scratch while collaborating with a 50-member interdisciplinary team across Electrical, Mechanical, and Computer Engineering.
  - Achieved All India Rank 16 out of 100+ teams, showcasing engineering excellence.

PROFESSIONAL EXPERIENCE

Graduate Research Assistant
Kate Gleason College of Engineering, Rochester, NY | January 2025 - Present

- Developing a novel non-invasive monitoring system for Ventricular Assist Devices (VADs) to assess pump performance and predict patient health status.
- Designing an advanced signal processing unit to enable real-time adjustments and predictive modeling.
- Optimizing real-time data analysis algorithms, improving prediction accuracy by 25% in forward modeling applications.
- Enhancing early detection of complications, reducing reliance on invasive procedures, and improving patient outcomes.

Software Engineer
Searce Co-Sourcing Pvt. Ltd., India | January 2022 – July 2024

- Developed and deployed scalable cloud-based applications, reducing system downtime by 30% and improving operational efficiency.
- Designed and implemented deployment tools, enhancing efficiency and reducing deployment time by 40%.
- Collaborated with software, data engineering, and cloud operations teams to optimize cloud solutions.
- Contributed to a top 3-ranked software delivery team in the APAC region and improved cloud expense tracking by 50%.

Key Projects:

- **Cloudmon**
  - Developed a Cloud FinOps tool for real-time cost tracking.
  - Implemented a React JS-based UI and Python (Flask) backend integrated with BigQuery and Firebase.
  - Reduced technical effort in expense tracking by 50%, improving financial transparency.
- **SaaS Accelerator**
  - Created a full-stack SaaS accelerator for the seamless deployment and monitoring of applications.
  - Built a robust platform using React JS, Firebase Firestore, and GKE.
  - Enabled seamless application deployment and monitoring, boosting operational efficiency.

EDUCATION

- **Rochester Institute of Technology, Rochester, NY**
  Masters of Science in Mechanical Engineering with Robotics, **Fall Sept 2024 -GPA 3.89**
- **MESWCOE**, **University of Pune India**
  Bachelor of Engineering – Mechanical Engineering, **Aug 2022**