

# SRIKARRAN SOWRIRAJAN

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🌐 Srikarran Sowrirajan

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## Education

**Stevens Institute of Technology, Hoboken, NJ**

**Sept 2022 – Dec 2023**

**MS in Mechanical Engineering (Robotics & Control)**

**GPA: 3.96/4**

- **Coursework** Robot Manipulators, Wearable Robotics & Sensors, Autonomous Mobile Robotic Systems, Analytic Dynamics, Modern Control Engineering
- **Project** Design & Validation of a Robust Computed-Torque Controller in Simulink for a Puma560 Robot Arm
- **Project** Model-Mediated Telemanipulation (in ROS) of a UR5 Robot Arm using a 3DS Touch Haptic Pen
- **Project** Control of an Autonomous Object Sorting Robot Using StateFlow & ROS

**Case Western Reserve University, Cleveland, OH**

**Sept 2014 – Dec 2019**

**BS in Mechanical Engineering**

- **Coursework** Design & Manufacturing (I, II), Control Engineering, Actuators & Drivetrains, Engineering Vibrations, Design of Mechanical Elements, Design of Fluid & Thermal Elements
- **Project** Design and Prototyping of a Mobile Robot with Re-configurable Wheels to Traverse in Legged and Wheeled Locomotion
- **Project** Design of a Robust Portable RO Filtration Device to Provide a 24 Hour Supply of Potable Water for a Family of 4

## Skills

**Design & Manufacturing:** Solidworks (FEA), AutoCAD 2D, CATIA V5, DFM, GD&T, 3D Printing, Laser Cutting

**Robotics & Control:** Simulink, ROS, Gazebo, Arduino, PLC

**Programming:** MATLAB, Python, Java, C++, venv

**Other Proficiency's:** Linux Bash, Git, Confluence, MS Office, L<sup>A</sup>T<sub>E</sub>X

## Experience

**Advanced Robot Manipulators Lab**

**Apr 2023 – present**

**Graduate Research Assistant**

**Hoboken, NJ**

- Engineered a model-mediated telemanipulation framework, leveraging open-source ROS drivers for the 3D Systems Touch haptic device and a 6-degree of freedom robot arm (UR5) to align leader-follower interaction.
- Developed Python packages for processing the user-input trajectory from the haptic device, and implemented an inverse-kinematics resolved-rates algorithm to evaluate the follower robot trajectory.
- Analyzed various Jacobian-based performance metrics of the follower robot to investigate the dexterity and sensitivity of the manipulator.

**Wearable Robotic Systems Lab**

**Dec 2022 – Apr 2023**

**Graduate Research Assistant**

**Hoboken, NJ**

- Designed, 3D printed, and machined key actuation components, creating innovative solutions to enable bi-directional cable-driven actuation of the ankle joint.
- Performed tensile testing using Instron of Bowden, Kevlar, Nylon and Dyneema cables to evaluate their failure load and deformation.
- Generated fabrication drawings to work with various machine shops in the Hudson County area. Executed quality checks and issued approvals for fabrication work.

**Paques BV**

**Jan 2021 – Aug 2022**

**Mechanical Engineer, Project Technical Lead**

**Chennai, India**

- Evaluated and endorsed engineering drawings for effluent and biogas treatment plant machinery, and executed detail engineering activities for piping and instrumentation.
- Provided technical expertise in vendor approvals with tight project budgets by offering component insights, preparing technical specifications, and generating accurate Bill of Quantities (BOQ)
- Performed gap analysis for ISO 9001:2015 certification by mapping the development, verification and validation processes to be implemented and participating in multiple internal audits.

**Invacare Corporation**

**Jan 2018 – July 2018**

**Mechanical Engineer Internship**

**Elyria, OH**

- Conducted a Design of Experiments (DOE) analysis to identify and address failure modes of the Portable Oxygen Concentrator (POC) product.
- Identified root causes of product returns as a result of the DOE analysis. Replaced 1 of 5 internal valve components from the POC assembly with a more robust design to achieve a 15% increase in first-pass yield for product returns.
- Executed software verification testing for an upgraded version, expanding flow settings from 4 modes to 5.