Srecharan Selvam

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EDUCATION

Carnegie Mellon University Pittsburgh, PA
Master of Science in Mechanical Engineering - Research; GPA: 4.0 / 4.0 May 2025
Relevant Courses: Artificial Intelligence and Machine Learning for Engineering Design, Computer Vision, Robot Dynamics and Analysis, Modern Control Theory, Intermediate Deep Learning for Engineers

Sri Sivasubramaniya Nadar College of Engineering Chennai, India
Bachelor of Engineering in Mechanical Engineering; GPA: 8.82 / 10.0 May 2023

EXPERIENCE

Kantor Lab, Carnegie Mellon University Pittsburgh, PA
Graduate Research Assistant - Micro Needle Dispenser Robotic System *August 2023 - Present*

- Utilized Gazebo to simulate a realistic agricultural environment, accomplishing 86% accuracy in testing and verification of robotic dynamics and sensor integration, thereby ensuring precise data replication in a regulated virtual setting
- Formulated a sophisticated 3D path planning system, ensuring efficient navigation of the dispensing system over agricultural crops, and utilized SLAM for dynamic terrain mapping and robot localization within a cultivated area of tomato plants

Vee Ess Engineering Chennai, India
Robotics Engineering Intern *May 2022 – August 2022*

- Implemented convolutional neural networks and edge detection in robotic systems for assembly lines using OpenCV, attaining a 20% improvement in quality control by precisely detecting defects in automotive parts such as brake and clutch pads
- Developed an automated calibration system for MIG welding robots in automotive assembly, utilizing algorithms to optimize the robot's orientation and torch alignment based on sensor data, thereby improving the precision of welding angles by 15%

Hanon Systems Private Limited Chennai, India
Mechanical Engineer Intern *June 2021 – August 2021*

- Engineered the automation of emission control components, including actuators for refrigerant lines and metal seal fittings, to achieve precise regulation and ensure compliance with environmental regulations
- Designed and integrated infrared sensors and variable valve actuators into thermal management systems for electrified vehicles, contributing to a 14% improvement in precise battery temperature control and extended range optimization

PROJECTS

Carnegie Mellon University Pittsburgh, PA
Gantry PhytoProbe Extractor System – Research Project *August 2023 – December 2023*

- Transformed Python code into ROS nodes for enhanced system controls and enable complex robotic operations
- Programmed the U2D2 Power Hub Board to establish communication protocols for precise Dynamixel motor control
- Crafted motor control code using Ubuntu Linux commands and API integration for task automation

Optimization-Based Control and Estimation in Compliant Robotic Systems – Course Project *August 2023 – December 2023*

- Established a control and estimation strategy for a 6D compliant robotic end-effector, merging high-frequency control algorithms with constrained optimization for precise, real-time manipulation at 50 Hz for block tilting with a vacuum suction system
- Boosted robotic end-effector precision and response by 10% with integrated ROS for sensor-driven, real-time feedback control

Sri Sivasubramaniya Nadar College of Engineering Chennai, India
Design And Fabrication of Cold Pressure Welding Machine – Course Project *December 2021 – May 2022*

- Integrated Inductive Proximity Sensors with hydraulic actuators, controlled via Arduino and Python, to facilitate high-precision, two-way die movement, enhancing the welding process's accuracy and efficiency by 33%

SKILLS

Programming Languages: Python (NumPy, PyTorch, OpenCV, Pandas, Scikit-learn, TensorFlow), C++ (Arduino), MATLAB
Application Software: ROS, Linux (Ubuntu), ANSYS, SolidWorks, Gazebo, AutoCAD, FlexSim. Raspberry Pi

HONORS AND AWARDS

- Awarded 3rd Best Paper at the International Conference on Processing and Characterization of Materials (ICPCM 2022); *Link*
- Received the 2023 Best Bachelor's Thesis Award for exceptional research and innovation in manufacturing engineering; *Link*
- Core Member of Youth Red Cross (2019-2023), led critical health campaigns, earning accolades for service and leadership