Samuel Morstein

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Education

Stanford University – Palo Alto, CA — Expected graduation March 2025
Candidate for Master of Science in Mechanical Engineering, Depth in Robotics and Kinematics — GPA 3.91/4.00
Georgia Institute of Technology – Atlanta, GA — May 2023
Bachelor of Science in Mechanical Engineering with a Minor in Robotics — GPA 3.97/4.00

Skills

Software: ROS/ROS2, OpenCV, Python, C/C++, Solidworks, Autodesk Inventor, MATLAB, LabVIEW, MS Office
Mechanical Concepts: Kinematics, Dynamics, Optimal/Adaptive Control, Computer-Aided Design, GD&T
Software Concepts: Path Planning/Trajectory Optimization, Machine Learning, Computer Vision

Experience

Mechanical Engineering Intern, Draper Laboratory – Cambridge, MA — June 2024-Present

- Led mechanical and software design of a Low-SWaP (size, weight, and power) rover to traverse a simulated lunar environment for Draper's summer intern project. Developed the autonomy stack in ROS2; designed and manufactured the chassis.
- Created and implemented an automated testing routine using MATLAB and LabVIEW to characterize an image sensor's performance throughout a range of temperatures. Collaborated with other disciplines to analyze the data and resolve issues, informing the design.
- Designed 1:1 showpiece of a military navigation system shown to customer at PDR printed on a polyjet printer.
- Generated shock isolator mounting concepts in Solidworks for a highly SWaP constrained system.

Consultant, Steam Instruments, Inc – Madison, WI — August 2023-December 2023

- Developed part numbering system and implemented OpenBOM PLM software to track and manage parts and CAD data. Allowed Steam to start inventory management and reuse parts between products.
- Investigated a central optic failure using Solidworks FEA, designed a support solution to prevent future failures.

Mechanical Engineering Co-Op, BMW Manufacturing Co. – Greer, SC — May 2021-December 2022

- Created a Python GUI program that shows a visualization of a computer vision system's adjustments to studs placed on car bodies to detect problems with stud gun robots, improving quality and statistical process control.
- Planned, programmed, and rolled out an internal change management website using Oracle APEX and SQL Developer used by over 100 planners, managers, and technicians within the Body Shop.
- Developed work scopes and oversaw the installation of utilities around the Body Shop including lighting, power drops, air drops, and HVAC. These utilities were required for new model integration as well as production.
- Designed a conveyor chain brush that helped to contribute to a six Production Associate headcount reduction.

Mechanical Engineering Intern, Steam Instruments, Inc – Madison, WI — March 2019-October 2020

- Designed parts and managed assemblies in Solidworks to assist design of a prototype protein sensor as well as designed parts used in prototypes including a radiation shield, sensor mounts, and UHV components.
- Created parts and managed assemblies in Autodesk Inventor and Solidworks to assist their design of a prototype laser ablation attachment for mass spectrometers.

Research

MS Researcher, Assistive Robotics and Manipulation Lab – Stanford, CA — Jan 2024-Present

- Integrated DenseTact visual-tactile sensors into a robotic hand and developed ROS2 nodes for its operation.
- Created a teleoperation framework enabling simultaneous control of the modified hand and Kinova Gen3 robotic arm using either a SpaceMouse and inertial hand tracking or with a VR headset and visual hand tracking.
- Working to demonstrate the advantages of visualizing tactile feedback during dexterous teleoperation.

Leadership

RoboRacing Mechanical Lead — May 2020-May 2021

- Lead the mechanical sub-team in Georgia Tech's competitive robotics organization in the design and execution of an autonomous racing vehicle to meet the needs of the electrical and software sub-teams.
- Oversaw the development of the car's steering, braking, and electronics mounting systems prior to the 2021 competition leading to a 2nd place finish.