Steven Swanbeck

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MISSION

I envision a world in which intelligent robotic systems are humanity's greatest allies to explore the unknown, keep people out of harm's way, and improve daily quality of life for all. I am dedicated to realizing this future.

WORK EXPERIENCE

Nuclear & Applied Robotics Group   Austin, TX, USA
Graduate Research Assistant   *Aug 2022 – Present*
- Research with Dr. Mitch Pryor's group to remove humans from hazardous environments using intelligent systems.
- Created a platform-agnostic 3D localization and mapping stack to facilitate autonomous navigation, surveying, and data reporting during robot deployments in spatially complex environments.
- Developed a machine vision pipeline to be deployed on autonomous platforms using LiDAR and image data with trained point cloud and R-CNN image models using Bayesian fusion to more-accurately detect and localize corroded material in industrial environments than existing state-of-the-art methods for use in Shell facilities.
- Built a manipulation software stack to perform non-contact surface coverage of complex geometries for purpose of painting in Shell process facilities using custom mobile-manipulator systems and performing alpha radiation survey in a nuclear boneyard environment using a Boston Dynamics Spot robot at Los Alamos National Laboratory.

Shell   Houston, TX, USA (Remote)
Robotics Research Associate   *Aug 2022 – Present*
- Worked under Shell's Give Robots a Day Job (GRaD) program to extend the capabilities of robots deployed at their facilities to perform inspection and maintenance tasks when the systems would otherwise go un-utilized.
- Specific area of focus was detection and repair of corroded material in both onshore and offshore process facilities.
- Successfully deployed a custom mobile-manipulator system at Shell Technology Center Houston to apply a protective enamel coating to detected corroded material, preventing its further development.

Smart Robotics Lab   Reno, NV, USA
Undergraduate Research Assistant   *Aug 2021 – Aug 2022*
- Research with Dr. Jun Zhang's group to facilitate safe human-robot interaction using soft-robotic systems.
- Designed a soft anthropomorphic gripper capable of mimicking the dexterity and grasping capabilities of the human hand while exerting a grasp force over 13 times its own weight which was shared with the Dexterous Robotics Team at NASA Johnson Space Center and tested on NASA's humanoid Valkyrie robot.
- Wrote a high-level ROS-based API to control the gripper with implemented modeling and control strategies.

Hamilton Company   Reno, NV, USA
Electro-Mechanical Engineering Intern   *Jun 2021 – Aug 2021*
- Built and tested electrical and mechanical subassemblies of Hamilton's Microlab VANTAGE precision liquid-handling robot for automated laboratory testing with emphasis on its rear-mounted manipulator system.

EDUCATION

The University of Texas at Austin   Austin, TX, USA
M.S. in Robotics, Mechanical Engineering; GPA: 4.00/4.00   *Aug 2022 – May 2024 (Expected)*

University of Nevada, Reno   Reno, NV, USA
B.S. in Mechanical Engineering; GPA: 4.00/4.00   *Aug 2018 – Dec 2021*
Honors: Valedictorian of the engineering class, Summa Cum Laude, Certificate of Commendation from the US Senate

SKILLS

Programming: Robot Operating System (ROS), C++, Python, MATLAB, Julia, Rust

Libraries: PyTorch, TensorFlow, OpenCV, Point Cloud Library, CUDA, Scikit-Learn, NumPy, Pandas, Matplotlib

Hardware & Design: SOLIDWORKS, PCB Prototyping, 3D Printing, GD&T

INTERESTS

Origami, Rock Climbing, Basketball, Puzzles & Riddles, Design, Sci-Fi Novels, Teaching