Mark Jennings

Applied Roboticist | *markjennings97@gmail.com* | *https://makr.org*

Work Experience

Los Alamos National Laboratory

R&D Engineer | *Oct. 2021 – Present*

- Overhauled nuclear glovebox with the first industrial robotic arm in US plutonium part production, optimized for safe and predictable motion
- Developed control software to automate hands-on labor, reducing radiation exposure to glovebox operators
- Coordinated efforts to deploy a heterogeneous fleet of mobile robots for autonomous contamination survey
- DOE Q security clearance

Nuclear and Applied Robotics Group at UT Austin

Graduate Research Assistant | *Aug. 2019 – Aug. 2021*

- Developed a C++ package to augment assembly tasks with a collaborative robot, reducing reported worker physical effort by 57%
- Refactored custom codebase to leverage open-source C++/Python libraries for an autonomous mobile robot

Sandia National Laboratory

R&D Intern | *June 2019 – Aug. 2019*

- Designed additively manufactured metal components and verified them in lab-simulated launch/flight conditions
- Led 1st place intern team in design competition

Apptronik

Engineering Intern | *May 2018 – Aug. 2018*

- Updated actuator testbed product to achieve higher payloads while cutting fabrication costs in half
- Tested firmware on spring-damper classification system and tuned MATLAB model to derive material parameters

ReNeu Robotics Lab at UT Austin

Undergraduate Research Assistant | *May 2016 – May 2019*

- Modeled and fabricated robotic exoskeleton components for stroke rehabilitation
- 3D-printed custom hand and finger prosthetics

Education

MS Mechanical Engineering

UT Austin | *Aug. 2019 – Aug. 2021* | *3.96 GPA*

- Research thesis: *Manipulator Control in Collaborative Assembly*

BS Mechanical Engineering

UT Austin | *Aug. 2015 – May 2019* | *3.84 GPA*

Skills

Software:

- C/C++, Python, Java
- MATLAB, LabView, Simulink
- Linux, Git, ROS/ROS2, Gazebo, MoveIt

Mechanical:

- CAD (SolidWorks & Creo), FEA
- Machining, CNC, Additive Manufacturing

Algorithms:

- Redundant manipulator control (Jacobian inverse, human-robot control)
- Mobile robot navigation and localization (SLAM, Kalman/particle filters, A*)
- Vision and calibration algorithms (Point cloud registration, ICP, Hand-Eye)

Outreach

Los Alamos FIRST Tech Challenge

Mentor/Coach | *Sept. 2022 – Present*

- Taught 12 middle schoolers STEM, problem-solving, and teamwork

UT Robotics & Automation Society

Mentor/Officer | *Aug. 2015 – May 2019*

- Mentored first-year competition teams and led just-for-fun robotics committee