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 autonomous robotic arm in US plutonium part production
- Developed control software, operating procedures, and tooling for robotic arm, hydraulic punch, and multiple laser marking systems
- Coordinated intern program and advised technical projects
- Held 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 up to 57%
- Refactored custom codebase to leverage open-source libraries for a more robust robotic research platform

Sandia National Laboratory

R&D Intern | *June 2019 – Aug. 2019*

- Designed additively manufactured metal components and developed corresponding qualification standards
- Led 1st place intern team in design competition

Apptronik

Mechanical Engineering Intern | *May 2018 – August 2018*

- Derived forward kinematic equations for an advanced humanoid bipedal robot
- Updated actuator testbed product to achieve higher payloads with lower fabrication costs
- 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*

- Designed components and actuators for rehabilitation exoskeleton robots
- Machined metal parts with both manual and CNC machines
- 3D-printed custom hand and finger prosthetics

Education

MS Mechanical Engineering

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

- Robotics courses in ME, CS, & Aerospace
- Research thesis: *Manipulator Control in Collaborative Assembly*

BS Mechanical Engineering

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

Skills

Software:

- Languages: C/C++, Python, Java
- Controls: MATLAB, LabView, Simulink
- Other tools: Git, ROS, Eigen, Linux OS

Mechanical:

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

Algorithms:

- Mobile robot navigation and localization (SLAM, Kalman/particle filters, A*)
- Redundant manipulator control (Jacobian inverse, human-robot control)
- 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