Jared Berry

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EDUCATION

Northwestern University | *McCormick School of Engineering*   Evanston, IL
Bachelor of Science in Mechanical Engineering | Robotics Concentration   September 2022 - June 2026
Master of Science in Mechanical Engineering | Robotics and Control   May 2025 - June 2026
Minor in Computer Science   September 2024 - June 2026
- GPA: **3.735/4.00**
- Relevant Coursework: Data Structures and Algorithms, Differential Equations, Circuit Design, Mechanics, Quadrotor Design, Mechatronics/Microcontrollers, CAD, Dynamic Systems, Robotic Manipulation, Machine Learning, Control Systems

EXPERIENCE

HAND ERC   Chicago, IL
Intelligent Dexterity Research Intern   June 2025 – Present
- Awarded National Science Foundation research grant as part of the Research Experience for Undergraduates program.
- Enhanced the fidelity of a **physically realistic** task environment using the Drake robotics simulator with a ROS2 interface.
- Created pipeline for **reinforcement learning** in Drake, including a custom **Soft Actor Critic (SAC)** implementation.
- Validated RL pipeline with a benchmark **dexterous manipulation** task, and designed sparse and shaped reward functions.
- Prepared pipeline for use in **Sim-and-Real Co-Training**, and tuned model hyperparameters to improve **sim-to-real transfer**.

Shirley Ryan AbilityLab   Chicago, IL
Clinical ML Research Intern   June 2024 – July 2025
- Collected and **processed raw sensor data** from 9 DOF IMU sensors using Python.
- Extracted and selected features for use in an ML model using multiple **feature selection** algorithms.
- Created **Python ML model framework**, and predicted upper-limb motor function for recovering stroke patients ($R2 = 0.93$).
- **Optimized model hyperparameters** using nested cross-validation and an Optuna hyperparameter search algorithm.
- **Nominated for best paper** at ICORR 2025 and presented findings to robotics professionals in a research symposium.

Mobile Mark, Inc   Itasca, IL
Engineering Intern   June 2022/2023 – September 2022/2023
Data Collection, Analysis, and Design
- Collected broadband data, analyzed trends with graphs in **Excel**, and presented them to engineers in comprehensive reports.
- Fabricated various antenna elements using a circuit CNC machine.
- Used **SolidWorks** to design and analyze the mechanical structure of various components.

Active Antennas for Industrial Mining and Military Applications
- Programmed final performance parameters on microcontrollers after product burn-in.
- Assisted in general assembly and soldering of TMA line.

PROJECTS AND RESEARCH

Mobile Manipulation + Pick-and-Place   *Robotic Manipulation, Northwestern University*
Capstone for ME449 Robotic Manipulation   September 2024 - December 2024
- Generated a **dynamically calculated** reference trajectory with Python using the desired length and joint speed parameters.
- Created a **feedforward + PI feedback controller**, enabling task completion from any initial configuration with arbitrary error.
- Calculated **forward and inverse kinematics** for the mobile base and manipulator of a KUKA youBot.
- Prevented self-collisions and singularities with a custom function to improve motion quality and robot safety.

Rogers Research Group   *Northwestern University*
Undergraduate Research Assistant   .   September 2023 – June 2024
- Performed **micro-soldering** for wearable and implantable ECG, and also assisted in signal tuning and encapsulation.
- Collected and analyzed EEG/EOG data, and processed signals using Python in preparation for machine learning.
- Investigated how to create a **ROS/Python** control framework for a robotic arm with EOG signal processing.
- Developed a **ROS2 position control framework** to manipulate a 7-DOF robotic arm.

PUBLICATIONS

[1] S. Okita, **J. Berry**, R. Khazanchi, F. Lanotte, M. K. O'Brien and A. Jayaraman, "Machine Learning-Based Estimation of Upper Extremity Function in Stroke Rehabilitation Using Body-Worn Inertial Sensors," *International Conference On Rehabilitation Robotics (ICORR)*, 2025. [Accepted, Nominated for Best Paper]

TECHNICAL SKILLS AND INTERESTS

Languages: Python, C, C++, C#, URDF, x86-64 Assembly, Matlab, Java, Arduino, Racket
Software: Gymnasium, Stable Baselines, ROS/ROS2, Linux, Drake (robotics simulator), Wandb, Unity, Godot, Krita, Inkscape
Machine Learning: Reinforcement Learning, Soft Actor Critic, Autoencoders, Model Optimization, Clinical ML
Fabrication and Design: SolidWorks, NX, Blender, CNC, Soldering, Micro-Soldering, Microcontrollers