Nick Cline

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EDUCATION

University of Massachusetts Amherst **Amherst, MA**

BS, MS in Mechanical Engineering | GPA 3.49/4.0 *Graduation Date: May 2022*

WORK EXPERIENCE

Draper Laboratory **Cambridge, MA**

Mechanical Instrumentation Engineer II *Aug 2022 - Present*

- Developed innovative design features for a sensor assembly by exploring trade spaces and proposing new solutions, resulting in a 15% reduction in mass while maintaining structural integrity to meet volume requirements.
- Designed and engineered CAD models of high-precision critical parts, optimizing for manufacturing efficiency and scaleable assembly.
- Participated in prototype testing and validation activities, analyzing test data to identify areas for design improvement and process refinement, leading to enhanced product reliability and performance.
- Refined production methods with 3D-printed test assets to evaluate process viability and overcome manufacturing barriers.
- Worked across a diverse electromechanical team to plan reviews, track performance, and communicate progress while meeting strict requirements.

Charge Analytics LLC **Ipswich, MA**

Design Engineer *Jun 2021 - Aug 2021*

- Executed end-to-end product development processes, from initial concept ideation and mechanical design to electronics packaging and prototype fabrication using 3D printing techniques.
- Generated CNC Fabrication process for retrofitting low-volume IoT parts to reduce costs by nearly 90% relative to quotes.

RESEARCH EXPERIENCE

University of Massachusetts Amherst HRSL **Amherst, MA**

Graduate Researcher *Dec 2021 - May 2022*

- Created control scripts in Python to implement custom impedance control loops on the HRSL Hip Exoskeleton using a Raspberry Pi 4 and the FlexSEA API.
- Analyzed the effect of unilateral stiffness on human gait by comparing kinematic metrics over stiffness ON and OFF phases, with results published in IROS 2022.
- Identified key areas for quality-of-life improvements to the experimental process and wrote software solutions to deliver key test metrics in real-time with low latency, enabling better feedback for control and evaluation.

SKILLS & INTERESTS

Skills: Microsoft Office Suite, Atlassian Suite, C, C++, C#, Java, Python, JavaScript, Rust, Julia, MATLAB, Solidworks, ROS 2, Gazebo, MPC, Underactuated Robotics, Nonlinear Dynamics, OpenCV

Interests: Robotic Locomotion, Robotic Manipulation, Deep Reinforcement Learning, Optimal Control, Whole-Body Robotic Control, Athletic AI

PUBLICATIONS

Price, M., Abdikadirova, B., Locurto, D., Jaramillo, J. M., **Cline, N**., Hoogkamer, W., & Huber, M. E. (2022, October). Unilateral stiffness modulation with a robotic hip exoskeleton elicits adaptation during gait. In 2022 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS) (pp. 12275-12281). IEEE