

Curriculum Vitae

Simon Charles || [LinkedIn](#) || ctrsimon@byu.edu

I am interested in developing intelligent physical systems that integrate mechanics, control, and learning. My work explores how mechanical structure can simplify control and enable robust behavior in robots operating in uncertain environments.

EDUCATION

Brigham Young University	Start Fall 2026
M.S. Mechanical Engineering	
Thesis: undecided	
Brigham Young University	April 2026
B.S. Mechanical Engineering (GPA 3.80)	
Minor: Mathematics	

RESEARCH EXPERIENCE

Undergraduate Researcher, Brigham Young University

Department of Mechanical Engineering

Advisor: Nathan Usevitch

- Compliant mechanism spherical joint for lunar operations
- Developed and refined a novel spherical joint

This work will result in a conference paper (summer 2026). The project was funded by a grant from NASA for the 2024 BIG Idea student competition.

- Developed optimized profiles for a flywheel-powered jumping robot

This work will result in a conference paper (summer 2026). The project was funded by university seed funding.

Advisor: Nathan Speirs

- High speed photography of interfacial fluid dynamics

Assisted a grad student as an undergraduate researcher. Funded by seed funding.

RESEARCH GRANTS

Contributions to Funded Research

May – Dec. 2025 *Untethered and Modular Inflatable Robots for Lunar Operations.*

Quantity: \$145,000.

Role: Editor

PUBLICATIONS

Manuscripts in preparation

1. Charles, S., et al: “Flywheel-Powered Jumping Robot using Variable-Pitch Screw Transmission” (*expected Spring 2026*)
2. Rose, A., Running, I., Charles, S., et al: “Novel Spherical Joints for Reconfigurable Isoperimetric Inflatable Robot” (*expected Summer 2026*)

PRESENTATIONS

Oral Presentations

1. “Modeling and Design of a Flywheel-Powered Jumping Robot,” Utah Conference for Undergraduate Researchers
Charles, S., Knight, I., Ho, S., et al. Feb. 2026
2. “Lunar Untethered Modular Inflatable Robot,” NASA BIG Idea Competition
Paul, C., Wade, J., Weaver, I., Charles, S. et al. Jan. 2025

Poster Presentations

3. “Precision Aerodynamic Particle Sorting,” BYU Capstone Design Fair
Charles, S., Essig, M., Foote, G., et al. Apr. 2026
4. “Lunar Untethered Modular Inflatable Robot,” Utah NASA Space Grant Consortium
Paul, C., Wade, J., Weaver, I., Charles, S. et al. Jan. 2025

HONORS & AWARDS

- Student Spotlight – BYU Department of Mechanical Engineering* Oct. 2025
I was selected from the student body to be spotlighted on the department’s [website](#).
- Finalist in the 2024 NASA BIG Idea Competition.* Jan. 2024
View the project description and result [here](#).

PATENTS

Provisional Patent

- “Multi-Link Spherical Joint” via BYU Tech Transfer Sep. 2024
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