

Patrick Herke

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EDUCATION

Louisiana State University (LSU), Baton Rouge, LA
Roger Hadfield Ogden Honors College

May 2023

Bachelor of Science, Mechanical Engineering | Minors: Spanish and Robotics

GPA: 3.91

Related Coursework: Intro to Robotics Lab, System Dynamics, Fluids, Sophomore Design, Machine Design.

Honors: Discover Day Top 10 Engineering Projects, President's Future Leaders in Research & Honor Roll (2020-2022).

SKILLS: **Software:** Solidworks, Alteryx, Tableau, LaTeX, MATLAB, Maple, Python, RStudio, C++, Microsoft Office.

Machinery/Hardware: FDM 3-D printing, Raspberry Pi, Arduino, Turning, Milling.

Language: Spanish – Fluent; English – Native Speaker.

EXPERIENCE

Systems Engineering Co-op

Jun 2022 – Present

Trane Technologies, Tyler, TX

- Using historical furnace usage data to better understand locations suitable for heat pumps.
- Wrote an article on methods for recycling 3D printer filament for the Sustainability Team newsletter.
- Qualified a new material for furnace latches to relieve supply chain issues.

Mechanical Engineering Intern, Maintenance Department

May 2021 – Aug 2021

W. R. Grace & Co., Baton Rouge, LA

- Identified material incompatibility between filter press plates and process slurry (\$27,000 annual savings).
- Converted ~8,000 documents from pdf to Word to allow updates, extracting data using OCR, RegEx, and Adobe.
- Provided missing code calculations by modeling 3 existing pressure vessels in the software package Compress.

Research Assistant - iCORE Lab

Sep 2019 – Present

President's Future Leaders in Research (LSU), Baton Rouge, LA

- Developing a cervical collar using granular jamming for improved restriction of motion, fit, & patient comfort.
- Using SolidWorks and additive manufacturing for the design and manufacture of prototype cervical collars.
- Presenting conference paper on prototype collar as the lead author at IMECE 2022 run by ASME.

PROJECTS / ACTIVITIES

Leadership Experience

2020 – Present

- **Maker Club (Founding Officer):** Planned and lead workshops on Solidworks, 3D printing, and other topics.
- **Ballroom Club (Treasurer):** Handled club funds. Provided 1-on-1 help to newer members during group lessons.
- **Trip Leader:** Planned transport, food, and itinerary for multi-day camping & backpacking trips. (Smokies & GC)

Teaching Experience

2019 – Present

- Provided weekly Fluids tutoring to several students including special sessions for exams (2022 – ME 3834).
- Taught a 3.5-hour System Dynamics study session for the first exam for 15 classmates (2021 – ME 3143).
- Planned and taught a lecture on buoyancy for Fluids while still enrolled in the course (2021 – ME 3834).
- Created a Thermodynamics [formula sheet](#) in LaTeX; still in use by some students (2020 – ME 2334).

Intro to Robotics Lab: People Following Robot (TurtleBot)

Fall 2021

- Used the Robot Operating System (ROS) to enable communication between the system components.
- Implemented object detection via AprilTags; search behavior to find new target; and sounds for start/stop.

Personal Projects

2018 – Present

- **Auto-Schedule Courses:** Checks class availability; emails openings to user; registers for class if setting activated.
- **Discord Bot (Python):** Implemented dice roller for custom Star Wars dice for use during virtual game sessions.
- Made an Anasazi style rim blown flute from elderberry; designed & 3D printed a modular flute with snap joints.
- Taught myself to play the flute; composed a melody to play on it in collaboration with a music major friend.