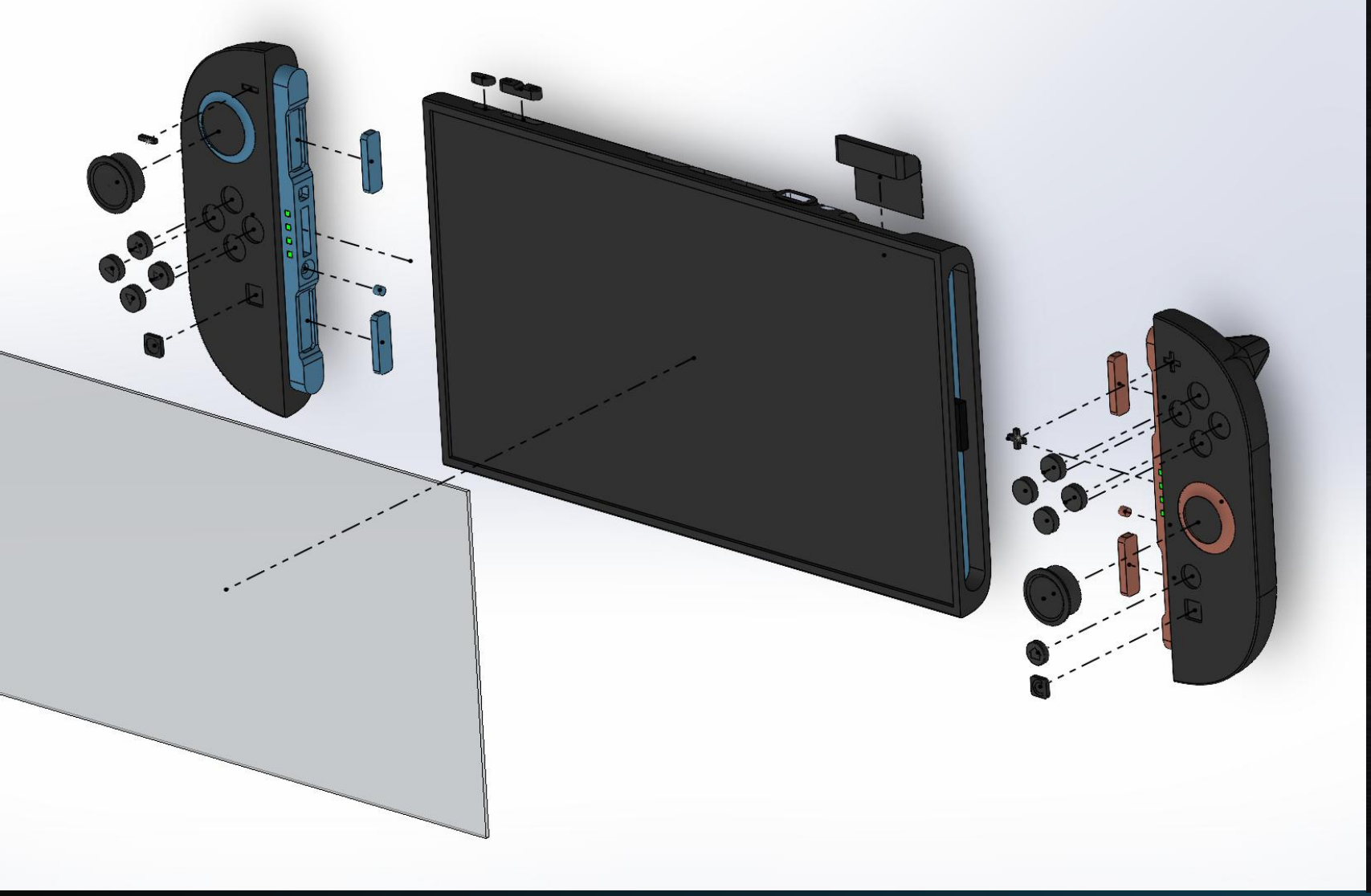


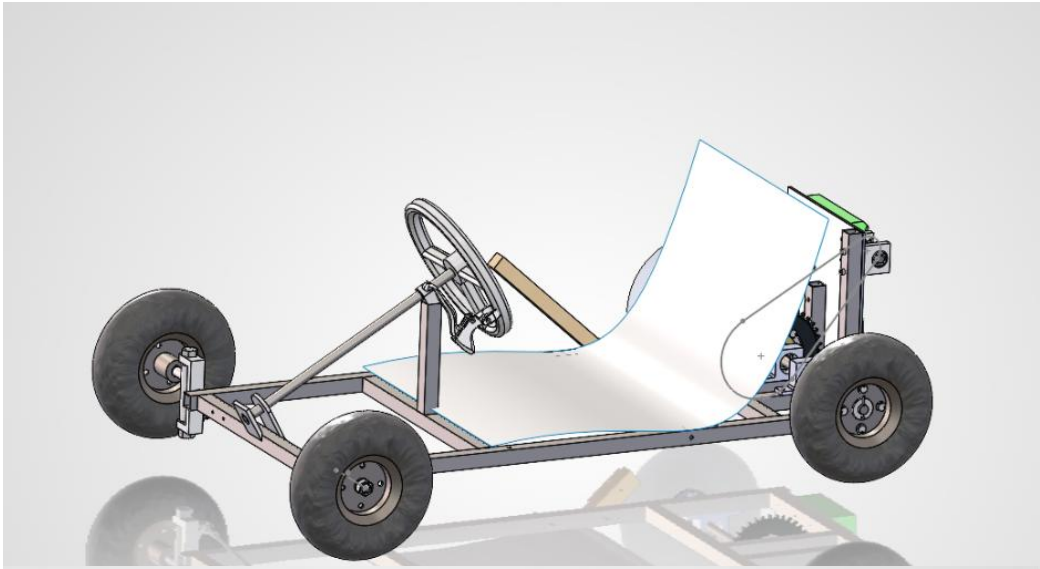


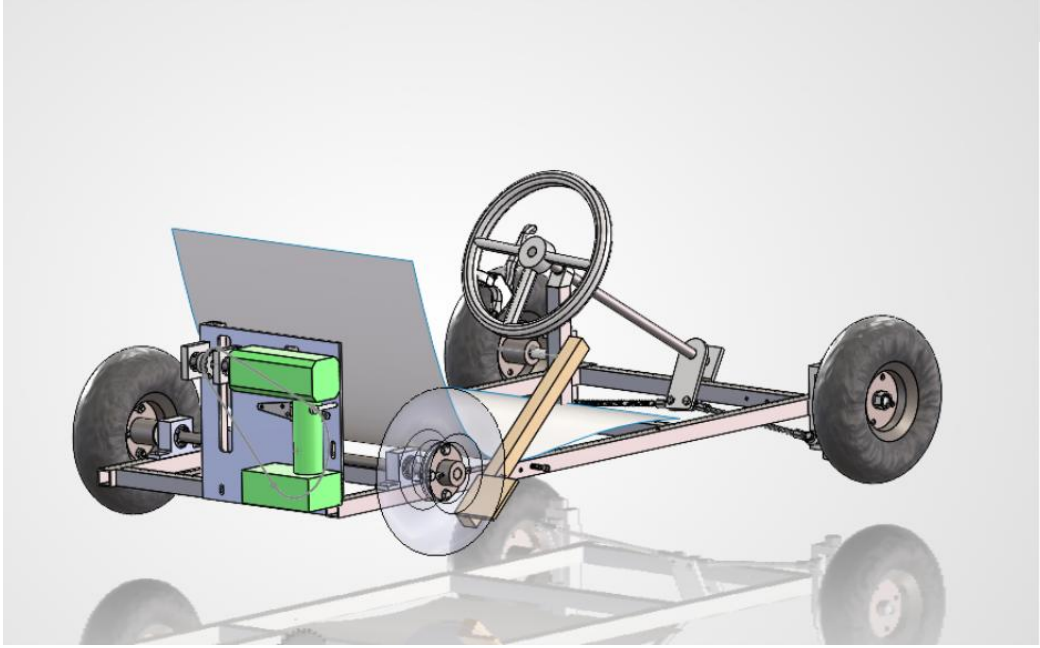
# Shane W. Morton – BS Mechanical Engineering Projects Portfolio

August 2026 - Present

# Component Design Course Project – Drill Powered Vehicle

- Currently in progress
- In this class, our team's goal is to create a vehicle powered by a Ryobi cordless drill. This vehicle will need to be able to support one driver and be able to complete several maneuverability and load bearing competitions without fail. So far, we have completed manufacturing reviews with or campus engineers and began to purchase and fabricate components. Upcoming we will begin to test our vehicle.
- Requirements: Minimum three load bearing wheel, must be shorter than 7 ft, must weigh less than 50 lbs, no modifications to the drill itself, must manufacture custom components for our vehicle, must cost less than $200 total

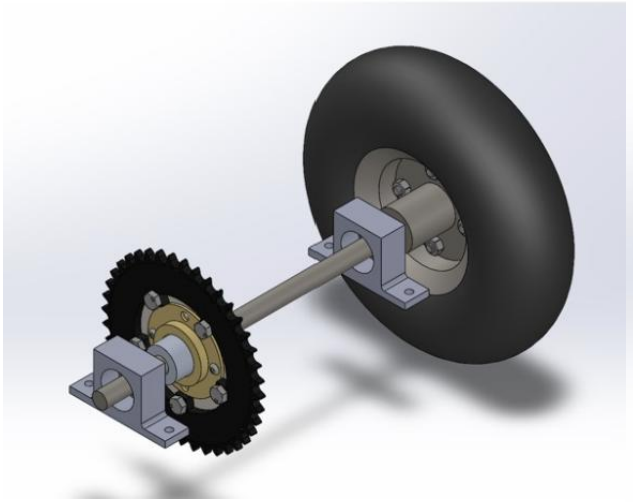


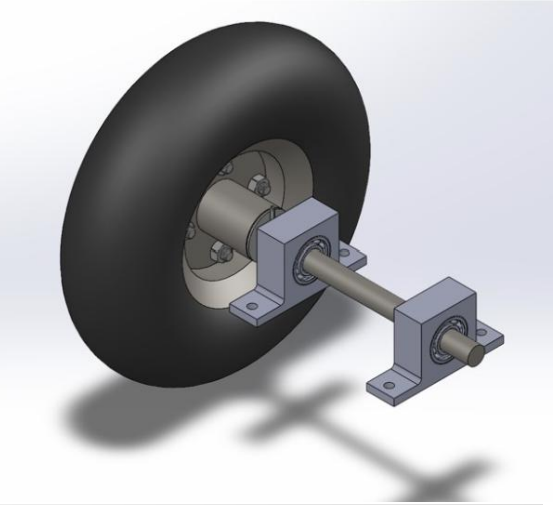


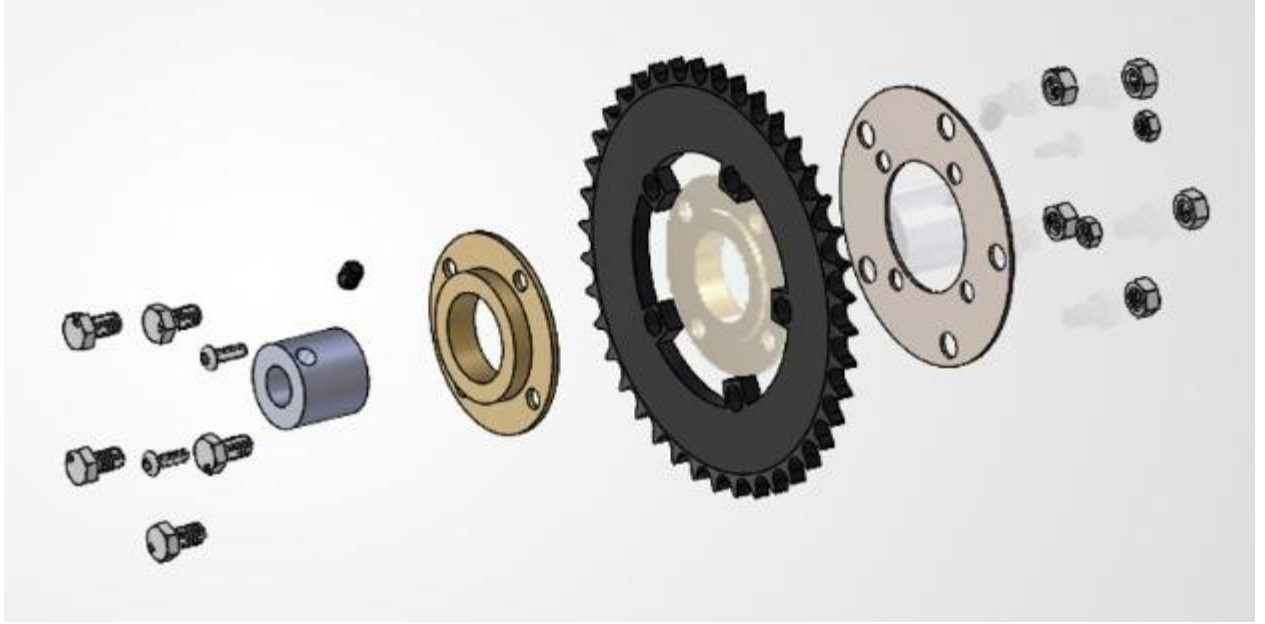
August 2026 - Present

# Component Design Course Project – Drill Powered Vehicle

- Our team of 6 is split up into four roles: one project manager, two CAD engineers, two manufacturing engineers, and one systems/testing engineer.
- I am the systems and testing engineer and so far I have drafted an overall timeline of the semester including necessary meetings with engineers, part acquisition, and manufacturing dates.
- I am also responsible for the drive train system. We are using a free wheel + chain ring set up linked with a chain to the drill sprocket to drive the right rear wheel.
- As a team, we have began purchasing and manufacturing our components.



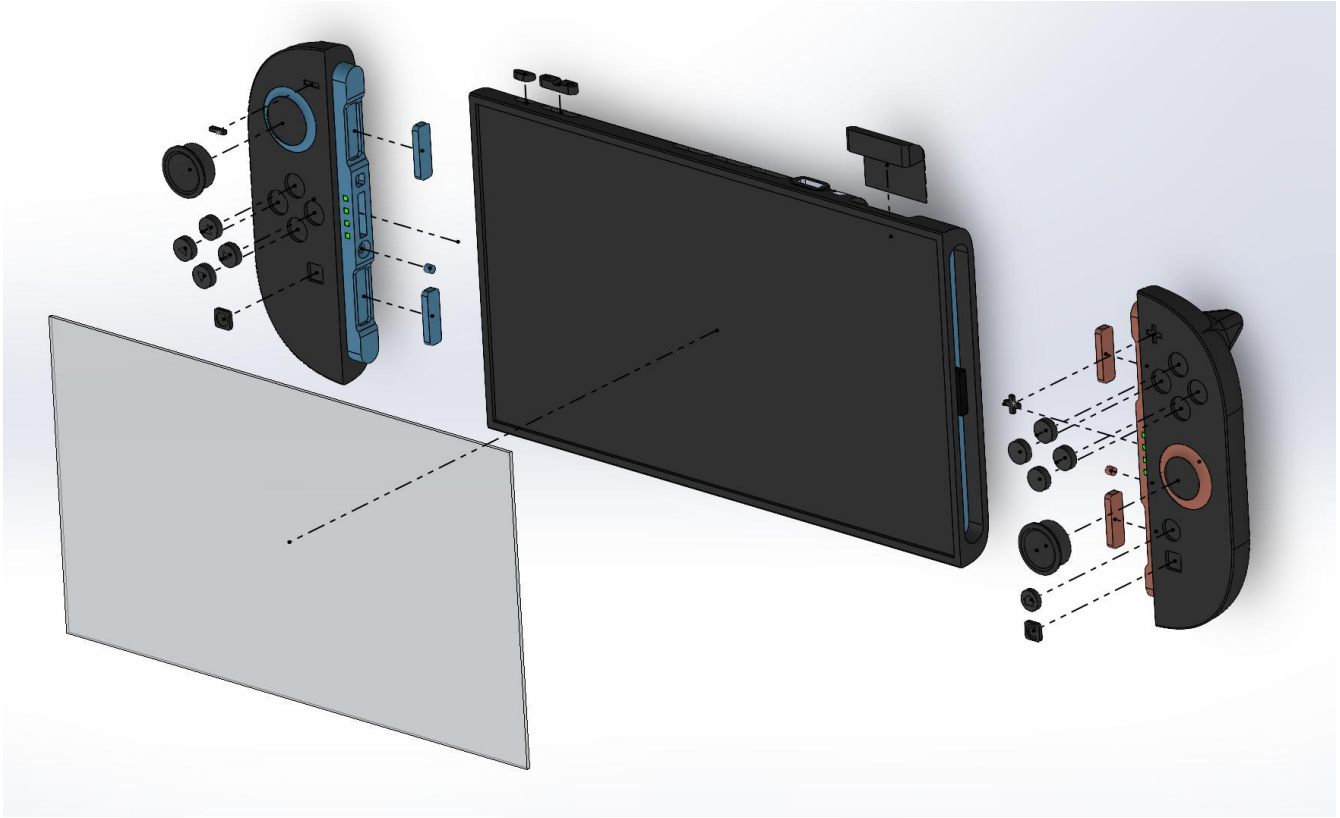




April 2026

# SolidWorks Course Final Project – Nintendo Switch 2

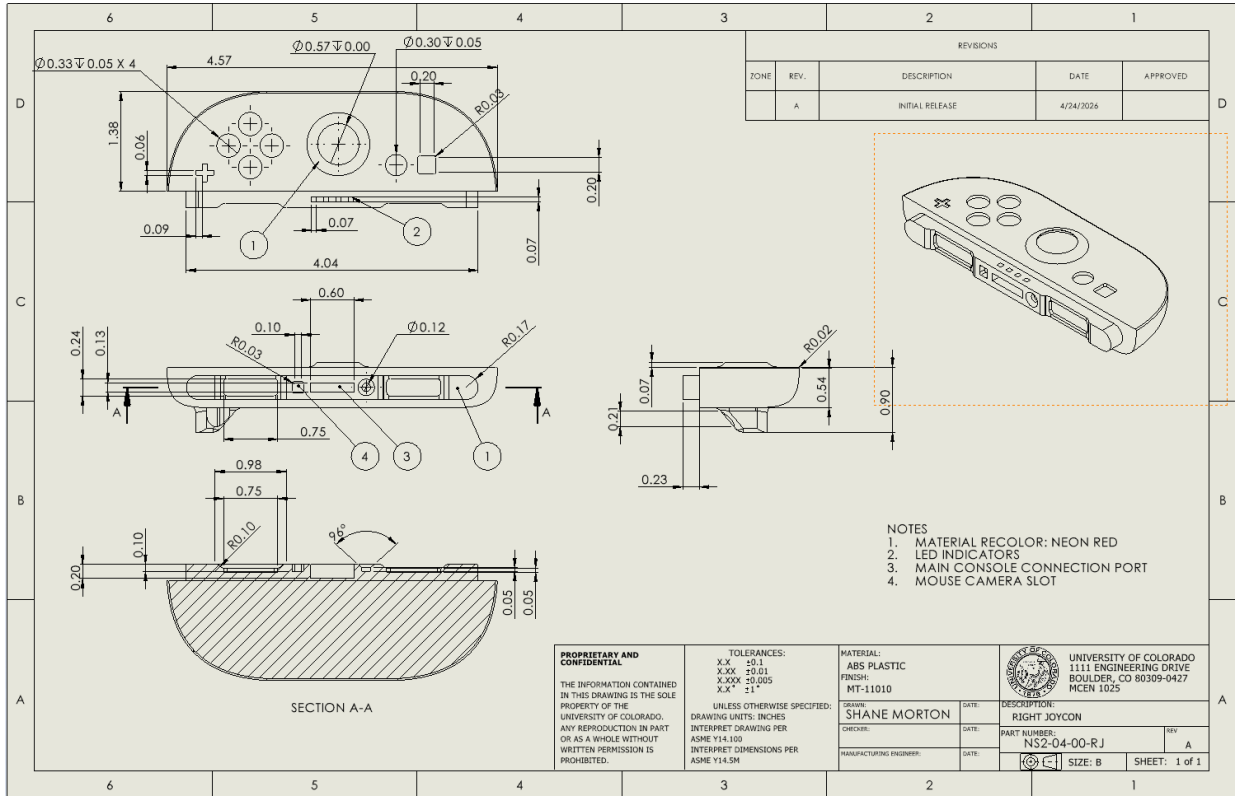
- For my introduction to CAD and fabrication class final project, I was tasked to model any object of my choice.
- Requirements: multiple components into one assembly, at lest one subassembly, fully dimensioned and detailed drawings of every part and assembly, present the design to the class, create my own document naming conventions.
- I choose the Nintendo Switch 2 because it has three obvious subassemblies and would test my weakness in modeling smooth shapes.
- Result: Nearly identical CAD model of the Nintendo Console excluding it’s TV stand and slight variance to the round edge’s measurements.



Shane Morton

# SolidWorks Course Final Project – Nintendo Switch 2

- As I predicted, the complex geometries of the ergonomics for the controllers were the most difficult part of the project.
- I found it very easy to rely on tools I knew how to use well, so I forced myself to integrate more complex modeling tools, such as surfaces.
- I got much better at drafting drawings as I made my way through each part (7 drawings total).
- Not only did I improve my SolidWorks capabilities, but I also used a pair of calipers nonstop throughout the project to measure the console precisely, thus increasing my skills with the tool.

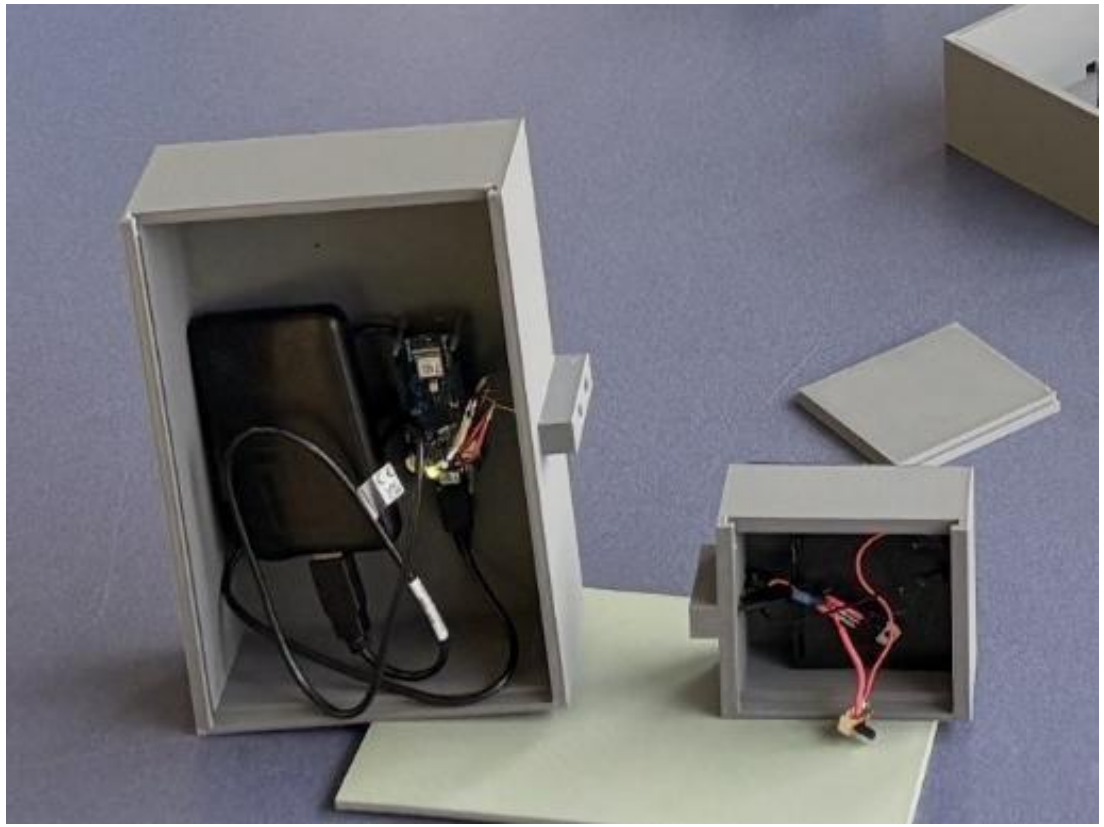





September – November 2025

# CU Intro Engineering Projects – Crowd Count

- Our team was prompted to identify a problem faced by University of Colorado Boulder students and staff on campus. Once identified, we were tasked with solving that problem with a product we created using a variety of engineering disciplines.
- Our team was comprised of engineering students from many different specialties: three mechanical, one aerospace, one electrical, and one integrated design.
- Requirements: utilizing Arduino hardware, creating 3d printed/machined parts, and integrating electrical components.



# CU Intro Engineering Projects – Crowd Count

- We concluded that nearly all students have an issue with crowded places on campus, such as the Rec Center or the Dining Halls, based on our survey. After that, we settled on a photogate design that could count an individual's entrance or exit, sum the value, and upload it to a database visible to all. This allowed students to check a space's crowdedness before arriving.
- My Roles
  - Electronics Lead: created all wiring components and all Arduino connection points and learned how to solder and heat shrink
  - Component Acquisition: In charge of purchasing all non-provided components such as lasers, batteries, and Arduino board.
  - Co-Lead of Programming: Wrote code loop to send data collected from the photogates to our publicly viewed database
- Design
  - Dual photogate system to differentiate an entrance/exit
  - Mounted on walls to be unobtrusive
  - Arduino MKR WIFI 1010 Hardware
  - Simplistic housing model due to time constraints

