

Project Portfolio

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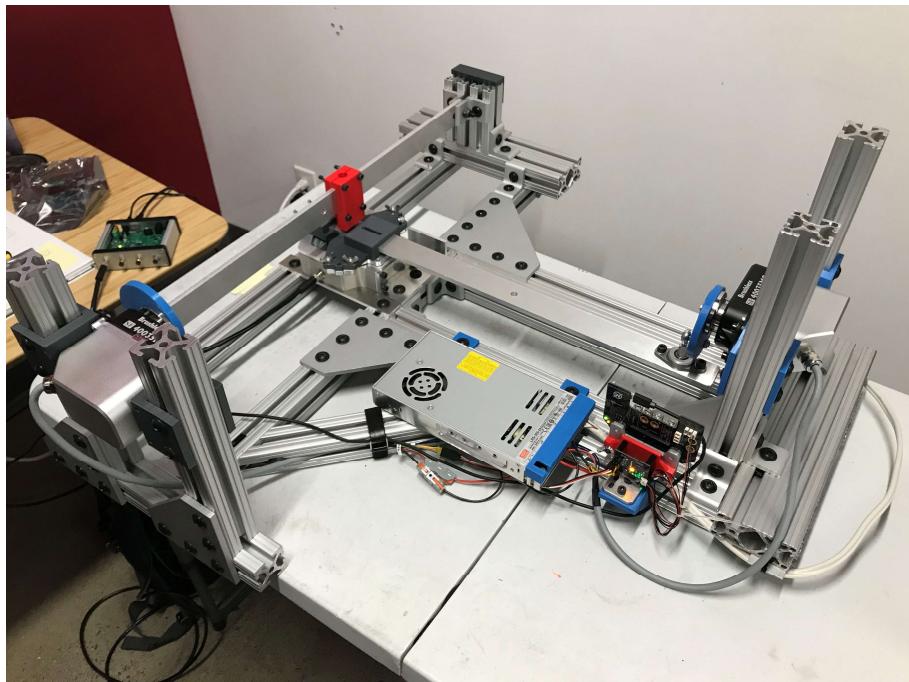
Parking Brakes, HiPot, DAQ, and Torque Sensors at Parallel Systems

At Parallel Systems, I designed a new parking brake system for an electric autonomous freight train. A fail-safe and efficient system was needed to meet industry standards and regulatory requirements. I also developed a high-potential harness test system to ensure proper pin-out and insulation resistance which eliminated the primary cause of vehicle bring-up issues. I also had the chance to work on data acquisition systems as well as torque sensors for high power dynamometers.



Fatigue Testing Machine for Custom Drone Testing Equipment at Tyto Robotics

I created a custom fatigue testing machine for drone testing equipment. The device under test which would be measuring thrust and torque from a mounted motor and propellor under normal condition, is placed in this machine to simulate the applied load. The servo-operated installation could supply up to 500 N of force and 250 Nm of torque to the equipment under test. The project was completed under fixed budget and time constraints, and required CAD modeling, physics simulations & calculations, supplier coordination, BOM/SOP creation, in-house manufacturing & construction, 3D printing, scripting, testing & validation, etc.



Consumer Product Design and Manufacturing at Ekidna

I was the primary mechanical designer that helped bring to market a revolutionary cannabis testing device. I designed the consumer-friendly testing device and packaging that integrated aesthetics, marketing, and engineering requirements. Project duration was important to meet the product launch date. The device successfully met requirements involving solvent resistance, smooth user experience, sensitive electronics protection, consumer electronics certification, long-term functionality and aesthetic, etc.

I also helped advance the design of a custom plastic injection moulded part to a final manufacturing-ready state. This part is a tube cap that would serve as the key component in the disposable test kit. Cost-effectiveness was a key metric in this design since the part was to be manufactured in the order of thousands. My responsibilities also included managing supplier relations, design revisions, manufacturing lots, BOMs, SOPs, production batches, etc.



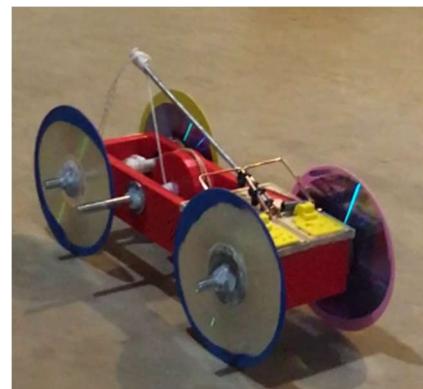
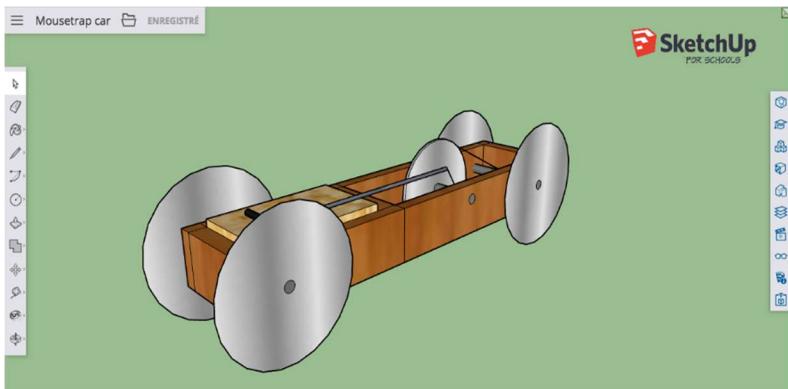
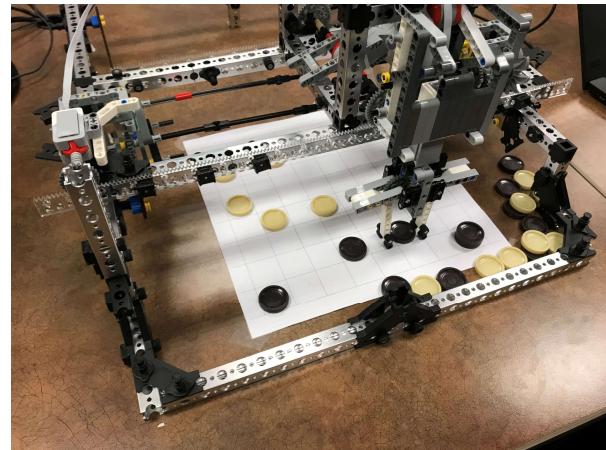
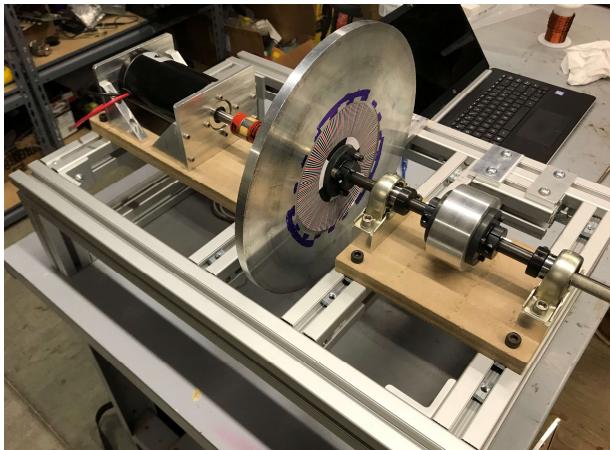
Automotive Factory Expansion and Improvement Projects at Raufoss Neuman

I was responsible for the design of several projects used in the expansion and improvement of automated factory installations. Adherence to safety guidelines and time constraints were important factors in the design process. The projects ranged from existing hardware improvements to custom assemblies and machined parts. Key factors in the design included seamless integration with the production line as well as budget and timeline adherence.



Engineering Design School-Oriented Projects

Academic-related projects include a hyperloop braking test rig, an autonomous checkers robot, and a mousetrap-powered car. Each of these projects were accomplished at different times in my academic career and each taught me valuable lessons.



Metalworking and Woodworking Personal Projects

My personal projects include 3 pull-up bars, a barbell lift, a coffee table, and a bench restoration to name a few. These projects led to great improvements in my metalworking and woodworking abilities using stick and MIG welding, a lathe, hand tools, etc. I really enjoy the hands-on work that was involved with these projects. Immense satisfaction accompanies the transformation of projects from a drawing to a tangible object.



Heavy Machinery Landscaping Project

I accomplished this landscaping project in a team of 3 over the course of a summer on a private residence. I used a 4.5-ton excavator and other equipment to install over 80 stones ranging in weight from 100 lbs to 400 lbs. The staircase has a 20-foot rise, a 60-foot run and has stood up well to the change in seasons since its construction.

