MATTHEW SUSKI

More projects and coops at www.matthew-suski.com

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Skills

- Thorough understanding of GD&T, Design for Manufacture, and Design for Assembly through tightly controlled fixtures and packaging
- Industry experience 2D and 3D modelling custom mechanical and electromechanical parts using Seimens NX, Solidworks and AutoCAD
- Proficient in FEA-driven design for design validation through linear and non-linear thermomechanical simulations using ANSYS and Solidworks
- Experience in Automation Design through prototyping, assembly, and validation of fixtures performing precise and repeatable motions
- Strong Statistical Analysis experience through evaluating development build test results and Cpk reports from suppliers
- Strong leadership and communication skills developed through over two years leading over 20 members of the solar race car team

Work Experience

APPLE INC – Packaging Product Design Intern – Winter 2019 – Spring 2019

- Characterized product response in packaging through various testing tools in order to reduce system structural failure rates by 50%
- Validated packaging designs through working with FEA team and DOE style testing to reduce overall packaging BOM cost by 8%
- Supported prototyping and material characterizations in order to identify and mitigate known and new failure modes
- Analyzed test data to draw statistically significant conclusions from low allocations using methods from the Design Validation Group

HATCH LTD. - Finite Element Analyst Intern - Fall 2018

- Conducted a nonlinear structural study to determine the minimum allowable thickness within 1mm of a nickel refinery air plenum
- Simulated the thermal effects of a 200+MW gas generator to evaluate resultant temperatures and induced loads on the foundation
- Delivered proposals, reports, and presentations to international clients in the North America, Australian and Middle Eastern regions

NORTH (FORMERLY THALMIC LABS) - Fixtures and Automation Design Coop - Winter 2018

- Designed and validated cycle testing fixture required to operate in thermal chambers in extreme humidity and temperatures
- Led the mechanical, electrical, and software design of fixtures required to move and position parts to within a 2mm tolerance
- Worked in a fast-paced environment to gather requirements and design fixtures from concept to issuance within short timeframes
- Supported bring up and troubleshooting of fixtures in order to validate design and ensure a smooth handoff to manufacturing
- Supported the mechanical and manufacturing teams through design and rapid prototyping of parts to quickly resolve issues

STI CONVEYOR SYSTEMS - Test Engineering Intern - Spring 2017

- Designed innovative solutions to improve corrosion resistance, and reduce wear in car wash components
- Analyzed assemblies with Solidworks Static Simulation to optimize and validate component geometry while minimizing cost
- Led testing and experimentation of conveyor belt modules to evaluate material selection, and predict conveyor life span

UNIVERSITY OF WATERLOO SOLAR CAR TEAM - Mechatronics Coop - Winter 2016

- Developed C code to operate the lights of the solar car that integrated with the vehicle through a CAN communication network
- Led design, manufacturing and assembly of a dual A-arm suspension system for a full size solar electric car

Projects

SOLAR CAR MECHANICAL LEAD

- Analyzing simulation data to evaluate materials, expected stresses and safety factor as it relates to steering and suspension parts
- Developing a hydraulic disk brake system with emphasis on heat dissipation through material and geometry on brake rotors
- Aiding in design of lithium ion battery pack with emphasis on thermal efficiency and reliable connectivity
- Working with the electrical team to oversee integration of advanced electrical control and pc power systems into vehicle

DESKTOP MODEL STEAM ENGINE

- Designed, modelled, and fabricated a model steam engine capable of continuous motion given a pressurized fluid input
- Sourced off the shelf parts and materials capable of sustaining the expected pressures and temperatures of the steam engine

Education

PORTFOLIO

Solar Car Chassis

The steel space frame for midnight sun's 12th car was designed to be able to withstand 5g loading from many different angles in order to meet the regulations of the competition. The chassis was simulated in Ansys in order to optimize tube diameter and thickness, resulting in the final chassis being less than 55kg while still supporting two occupants.



Arduino RC Car

The Arduino RC car shown below can successfully uses a simple DC motor to drive forwards and in reverse, and a simple Ackermann steering system combined with a servo motor allows the car to turn. The car is controlled from a very basic app which connects to the RC car on a HC 06 Bluetooth module to communicate with the onboard Arduino.



Steam Engine

This Desktop Steam Engine will spin a flywheel continuously given a fluid input. It was a completely original design, in which pressure, temperature, and humidity played a key role in how geometry was defined, materials were selected, and components were manufactured.

