Eric Bokenfohr

Mechatronics Engineering Student

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Work Experience

Tesla
Palo Alto, CA
Drive Systems Modelling Intern — Jul 2022 – Jan 2023

- Created a modular electric oil pump model using MATLAB object-oriented programming and Simulink
- Developed the hardware and processing software for a novel testing rig that automates the measurement of oil flow paths in a drive unit
- Characterized and evaluated electric oil pump performance using test bench and drive unit data

UBC Mechanical Engineering
Vancouver, BC
Undergraduate TA — Sep 2021 – Apr 2022

- Instructed and evaluated 124 second year mechanical engineering students in key dynamics and fluids concepts through labs

Westport Fuel Systems
Vancouver, BC
Combustion, Performance, & Emissions Engineering Co-op — Jan – Aug 2021

- Designed and conducted engine experiments to optimize engine hardware and software, and utilized MATLAB-processed results to develop new calibrations
- Performed initial testing of a hydrogen-fuelled engine that has comparable efficiency to a diesel engine, but with very low carbon emissions
- Resolved on-engine mechanical and software issues through testing

Rostrum Medical Innovations Inc.
Vancouver, BC
Hardware Engineering Co-op — Jul – Sep 2020

- Performed verification testing on sensors for the VQm Pulmonary Health Monitor to make sure the correct gas levels are delivered to patients
- Tested electrical valves and regulators to verify the components would not fail over the lifetime of the VQm
- Created leak-test procedures based on ISO standards, and used SolidWorks to create custom breathing circuit fittings

Student Team Experience

UBC Supermileage Team
University of British Columbia
Team Captain — Sep 2018 – Present

- Manage a 56-member student design team that designs and builds three vehicles for international energy-efficiency competitions
- Procure and oversee a team budget of $75,000, and manage engineering resources to build and optimize the team vehicles
- Coordinate and represent the team at events such as the UBC APSC Open House and Energy Disruptors Unite to raise awareness of STEM and the team, and network with sponsors

Key Achievements

- Developed vehicle models in MATLAB/Simulink and also C++
- Oversaw the design, manufacturing, and testing for the team's first hydrogen fuel cell vehicle
- Designed a new composite vehicle chassis using ANSYS Composite PrepPost (ACP) that reduced the chassis mass by 28%
- Led the research & development of a new aerodynamic shell using STAR-CCM+ computational fluid dynamics (CFD) that showed a potential drag reduction of 25%
- Resolved vehicle issues under tight time constraints at competition, and placed 2nd in 2019 and 2022 as well as 3rd in 2023

Education

University of British Columbia
B.A.Sc. in Mechanical Engineering
Mechatronics Specialization, Honours
GPA: 3.86 (88%)

Technical Skills

Mechanical
SolidWorks | ANSYS (Mechanical, ACP) | STAR CCM+ | Dynamics | Composite Materials | Vibrations | Machining | Solid Mechanics | Heat Transfer

Programming
MATLAB and Simulink | Embedded C | LaTeX | C/C#/C++ | Data Structures and Algorithms | Git and GitHub | Python

Mechatronics
Soldering | Sensors and Instrumentation | Microcontrollers | Systems Modelling/Control | Electromechanical Systems

Projects

SOLO
Sep 2021 - Apr 2022

- Developed a venture for a sound localization device for hard-of-hearing individuals
- Built a working Minimum Viable Prototype of the device using a Raspberry Pi, microphone array, Arduino Uno, and vibration motors

Building Brick Sorter
Nov - Dec 2021

- Designed and built a mechatronics system for sorting toy building bricks by colour on a conveyor
- Implemented computer vision to identify block colour, and a MSP430 microcontroller to run the conveyor and actuate servo motors for sorting

Awards and Certificates

University of British Columbia

Dale Cherchas Memorial Prize	2023
James B McLaren Memorial Scholarship	2021, 2022
MECH Leadership Award	2021
MECH Academic Achievement Award	2020
Trek Excellence Scholarship	2018, 2019
Dean's Honour List	2017-2022

Engineers and Geoscientists BC
Student Member Scholarship — 2022

SOLIDWORKS
Certified SOLIDWORKS Associate — 2019