

David J. Morvay

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CAREER OBJECTIVE

Seeking a test, validation, or design position in the field of Electrical/Computer Engineering.

WORK EXPERIENCE

Electrical Design Engineer – Propulsion (June 2021 – Present) & **Battery Intern – Propulsion** (January 2021 – June 2021)

Lordstown Motors Corporation, Lordstown, Ohio

Battery Pack Validation & Testing

- Responsible for the procurement, set-up, and maintenance of several NH Research high-voltage battery testers.
- Programmed drive cycles using Enerchron Test Software to validate the performance of Alpha, Beta, and PPV battery packs.
- Utilized Python to log CAN data and simulate a vehicle control unit for battery pack end-of-line testing.
- Developed MATLAB and CAPL scripts to analyze and evaluate CAN data from battery pack cycling.
- Troubleshoot and diagnosed battery packs returned from the field for any manufacturing or design related issues.

Battery Management System Software Verification

- Performed testing on battery management systems to validate the functionality of new algorithms and software. Verified features and requirements such as power limits, charge modes, state of charge calculations, and CAN timing.
- Supported vehicle level tests to ensure the BMS adhered to engineering requirements in all climates and environments.

Traction Inverter Research & Development

- Researched numerous EV powertrain designs to develop system requirements for an electric pick-up truck traction inverter.
- Worked closely with vendors to select and source applicable components for conceptual, prototype, and reference designs.
- Utilized SPICE and EDA tools to design and simulate fundamental traction inverter components.

Summer Engineer Internship, General Motors Company – LG Chem Michigan (Joint Venture), Holland, Michigan (Summer 2020)

Cell Voltage Measurement System

- Designed an automated voltmeter using an Arduino Mega 2560, relay boards, and multiplexers.
- Programmed and wired electronics to operate at specific time internals to reduce the risk of damaging equipment.

Damaged Battery Cell Analysis

- Performed high potential-high voltage evaluation on battery modules to identify any indication of defective cells.
- Further organized and examined test results using Microsoft Excel to investigate trends in the data.

Electrical Engineering Internship, MSSL Wiring System Inc, Warren, Ohio (Summer 2019)

Product Engineering Assignments

- Provided customers with quotes for the manufacturing and production of wiring harness assemblies.
- Evaluated customer prints and created bill-of-materials with part pricing and labor estimates.
- Researched databases for interchangeable parts to improve cost savings and production efficiency.

Launch Lab Student Assistant, Youngstown State University, Youngstown, Ohio (September 2019 – March 2020)

3-D Printing Support

- Repaired and maintained various models of 3-D printers, such as LulzBot TAZ 6 and Prusa i3 MK3S.
- Modeled and printed 3-D structures for students and faculty members.

Locker Room Attendant, Cleveland “Lake Erie” Monsters Hockey (Cavaliers Holdings, LLC), Cleveland, Ohio (2010 – 2020)

- Help visiting clubs and on-ice officials with gameday operations.

Grounds Crew Staff, Tamer Win Golf & Country Club, Cortland, Ohio (Summer 2018, May-June & August-November 2020)

- Involved in the maintenance and upkeep of the course.

EDUCATION

Youngstown State University, Youngstown, OH (Graduated May 2021) – *Summa Cum Laude*

- William Rayen School of Engineering and Engineering Technology – ABET Accredited
- Bachelor of Engineering; Electrical & Computer Engineering
- Youngstown State University Honors College, Honors Scholarship, President’s Scholarship, President’s List, & Dean’s List.
- Significant Courses – Basic Circuit Theory, Programming and Problem Solving, Data Structures and Objects, Electromagnetic Fields, Electromagnetic Energy Conversion, Power Systems Design, Signals and Systems, Linear Control Systems, Digital & Analog Circuits, Digital Circuit Design, Computer Design, & Embedded Systems.

Overall GPA of 3.92

COURSE PROJECTS

NASA Lunabotics Rover, Senior Design (Spring 2021)

- Led an electrical engineering team of four seniors and several underclassmen in the design and build of a mining rover.
- Designed and programmed the controls for the entire rover using VHDL and a Basys 3 Artix-7 FPGA board.
- Developed UART communication in VHDL to send and receive data from the master controller on the rover.

Atari Breakout Style Game, Embedded Systems (Fall 2020)

- Designed a video game with animations, moveable objects, and a scoreboard using Verilog.
- Prototyped and tested functionality with an FPGA, VGA output, and monitor.

Automated Dog Feeder, Intermediate Lab II (Spring 2020)

- Prototyped and coded a system that dispenses dog food at specific time intervals throughout the day.
- Employed a pressure sensor, servo motor, and Texas Instruments MSP430 to dispense the proper amount of food into a bowl.

Basic VHDL Calculator, Computer Design (Spring 2020)

- Created an 8-bit calculator with addition, subtraction, and multiplication operations using design and testbench files in VHDL.

LEADERSHIP/INVOLVEMENT EXPERIENCE

- Member of the Tau Beta Pi Engineering Honors Society (Inducted March 2020)
 - Qualified as one of the top 21 junior students (1/8th) from all five engineering disciplines.
- Member of the Youngstown State Chapter of Phi Kappa Phi Honors Society (Inducted March 2020)
- Member of the Institute of Electrical and Electronics Engineers (September 2018 - Present)

TECHNICAL COMPETENCIES

- Computer Languages: *VHDL, Verilog, C/C++, Python, MATLAB, Simulink, CAPL, HTML, & CSS*
- Software: *CANalyzer, Enerchron, PSpice, LTSpice, Altium Designer, Fusion 360, Solidworks, Xilinx Vivado, & ModelSim*
- Hardware Experience: *Raspberry Pi, Arduino, Xilinx FPGA (Artix-7), & TI MSP430*

EXTRACURRICULAR ACTIVITIES

- Lakeview High School (Cortland, Ohio) Varsity Baseball Coach, Spring 2022
- Youngstown State University Robotics Club, Spring 2020 – Spring 2021
 - Senior electrical engineering team member and NASA Lunabotics Competition participant.
- Youngstown & Warren Class “AA” Baseball League, Summer 2017, 2019, & 2021
- Youngstown State University Intramural Basketball League, Winter 2019 & 2020