

## OBJECTIVE

To find full-time employment as a remote or local research engineer in Electrical and Computer Engineering. My long-term goal is to continue doing research work relating to autonomous vehicle simulations, and in the meantime work diligently contributing to projects that make positive impacts within the world.

## EDUCATION

Michigan Technological University  
**BS Computer Engineering**

Houghton, MI  
**Graduated May 2020**

Michigan Technological University  
**MS Computer & Electrical Engineering**  
**GPA: 3.75**

Houghton, MI  
**Graduated May 2022**

## PUBLISHED WORKS

**MS Thesis:** Off Road Autonomous Vehicle Modeling and Repeatability using Real World Telemetry via Simulation

**Website:** <https://mpspencer93.github.io/Papers/>.

- Measured the difference between a modeled autonomous vehicle's path execution in a UE4 simulated environment against its real vehicle counterpart at lowered simulation step frequencies.
- Presented research at the 2022 SPIE Defense and Commercial Sensing conference, where a condensed version of my work is being included in the conference's upcoming "proceedings" publication.

## ENGINEERING WORK EXPERIENCE

**Employer:** Keweenaw Research Center

May 2018 - Present

**Objective:** To work together with many engineering disciplines developing government funded research projects.

- Designed and developed a UE4 real-time GPS simulation program utilizing UDP connections to a ROS microcontroller aboard a military vehicle.
- Created a custom pure-pursuit control implementation within a UE4 simulation that dynamically drives the vehicle based on previously recorded vehicle telemetry over an imported terrain mesh of a real environment. Uses programmed physics within UE4 while logging and recording simulation data during execution.
- Accurately simulated real world geometry obtained from 3D geo-located LiDAR and color data within UE4 by building a custom plug-in.
- Team lead on the development of a modular simulated LiDAR plug-in within UE4.
- Chartered the beginning of a custom 3D mesh editor application utilizing OpenGL and C++ for Windows.
- Created a web-based HTML application for full time employees to check out part numbers, where the server saves a record of previous parts for employee reference through the application.
- Helped an effort to find the time delta at the hardware level between two master clocks synced to local GPS.

## ENTERPRISE PROJECT EXPERIENCE

**Project:** Husky Games Arcade Cabinet

September 2018 - January 2020

**Objective:** To develop and design an arcade cabinet to showcase video games created by Michigan Tech enterprise students.

- Was team lead on designing and implementing a custom user-interface for students to play and upload games onto the cabinet. The software used a mix of Python, C#, and C for the GUI and backend server architecture.
- Outfitted the cabinet with a custom computer utilizing USB arcade stick controllers running on Windows 10.
- Implemented the carpentry and design process necessary to create a retro-themed arcade cabinet for its visual arrangement and construction.

## INTERNSHIP EXPERIENCE

**Employer:** Jackson National Life Insurance

October 2017 - May 2018

**Objective:** To assist full time employees in the development of financial software applications from a remote office located within Michigan Tech's "SmartZone" building.

- Was a java software developer for the "Output Solutions" team.
- Helped keep updated SQL databases for project development.

- Was a student team lead in testing/developing current software applications.

## ENGINEERING PROJECT EXPERIENCE

**Project:** Campus Organization Website

June 2017 - July 2017

**Objective:** To develop a website capable of tracking/managing musical dates, musician profiles, and scheduling events for an on-campus organization.

- Utilized CSS, PHP, HTML, JavaScript, and MySQL to complete the project.
- Constructed server-side code and a MariaDB database to handle profile information with PHP and MySQL.
- Successfully deployed the website onto a hosted server, providing technical support for the website until it was shut down in late 2018.

## COMPUTER/TECHNICAL SKILLS

- |                          |                            |                           |
|--------------------------|----------------------------|---------------------------|
| • C, C#, C++, ROS        | • Python, MATLAB           | • HTML, CSS3              |
| • Java, Javascript       | • UE4, OpenGL              | • PHP, mySQL              |
| • Verilog, FPGAs, CANbus | • TCP/UDP Networking       | • Windows/UNIX OS         |
| • Bitbucket, Git         | • Digital Image Processing | • Artificial Intelligence |

## VOLUNTEER HISTORY

**Homeless Shelter** | Room at the Inn | Marquette, MI

August 2015 - August 2016

**His House** | Marquette / Houghton, MI

April 2015 – May 2019