

**Carlos \*\*\*\*\***

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## OBJECTIVE

Seeking a TA position in the ECE department at UC Davis

## EDUCATION

Michigan Technological University

**BS Computer Engineering** (*Magna Cum Laude*)

GPA: 3.87

Houghton, MI

received December 2018

## WORK EXPERIENCE

**Embedded Software Engineer**, SpikeGadgets, 01/2020 – present

- Firmware for data loggers that interface with animal brains and their control stations
  - Interfacing ARM microcontrollers, sensors, FPGAs, and storage devices
  - RF communications for real-time statistics and time synchronization
  - Analyzing and improving system performance in heterogeneous compute architectures
  - User-facing firmware update systems, including bootloaders, update clients, and toolchains
  - Designing for low-power applications by working with battery monitoring technologies
  - Real-time digital filtering and communications protocols on mixed-signal systems
  - Developed multiple products for use by scientific researchers
  - Interdisciplinary collaboration with engineers and scientists from different specialties
- Hardware prototyping & circuit design
  - Prototyping data loggers with off-the-shelf components
  - Determining product feasibility with low-cost, low-spec PCBs
  - Ordering and assembling low-volume prototype circuit boards under a microscope
- Software
  - Modeling and analysis of data sets in Python
  - Systems programming. Quick interfaces for low-level hardware tasks.
- Idea generation and working in a laboratory environment

**Electrical Engineer (Fiber Optic Systems)**, Michigan Scientific Corporation, 01/2019 – 8/2019

- Developed a prototype for 20 kHz analog transmitter/receiver pair for use in electromagnetic compatibility testing
  - Analog front-end and analog-to-digital conversion
  - Digital filtering including anti-aliasing and interpolation on Lattice FPGA
  - Line coding and clock and data recovery

**Engineering Intern**, Michigan Scientific Corporation, 05/2017 – 12/2017, 05/2018 – 08/2018

- Integrated audio components into microcontroller-based control systems
  - Microcontroller code for acoustic measurement of engine cylinders
  - PID control loop to match input and output frequencies
  - Use a line of best fit to determine spatial volume
- Automation projects to improve technician workflow
  - Automate inductor core loop winding
  - Integrate engraving laser motor driver with software API

## PROJECT EXPERIENCE

**Project Engineer**, Robotic Systems Enterprise, 9/2016 – 12/2018

- Participated in GM-sponsored AutoDrive autonomous vehicle competition
  - Worked on a Robot Operating System driver for autonomous vehicle radar
- Implemented a protocol for underwater submersible communications
  - System-level software design from front end down to hardware layer

## TEACHING EXPERIENCE

**Java I Lab Assistant**, Michigan Technological University, 09/2016 – 5/2017

- Helped students solve programming lab assignments in the allotted time frame.
- Communicated issues with the lab to the teaching assistant leading the section.

**Summer Youth Programs Instructor**, Michigan Technological University, 06/2016 – 07/2016

- Taught 4 sections of a technical summer program for middle & high schoolers
  - Web development & game development
  - Created daily itineraries and activities to teach programming skills
  - JavaScript, HTML, CSS

## HONORS & AWARDS

**3M Endowed Scholarship**, Michigan Technological University ECE Department, 08/2017

**Michigan Tech Transfer Scholarship**, Michigan Technological University, 01/2016

## WEB PRESENCE

**LinkedIn**, <https://www.linkedin.com/in/carlos-w-m/>

**Blog**, <https://www.carloswm.com/>

**LANGUAGES** — English, Spanish

**PASTIMES** — Backpacking, Running, Guitar, Banjo, Science Fiction

## TECHNICAL SKILLS

- ARM microcontrollers
- C/C++, Python, Linux
- PCB design (Eagle, KiCAD)
- FPGAs (Xilinx, Altera, Lattice)
- Zephyr RTOS, Microblaze
- Scopes, Logic analyzers
- UART, SPI, I2C, SDMMC
- RF protocol stacks, DSP
- Surface-mount soldering