# **Curt Henrichs**

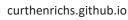
Software Engineer

# Aspiration

I am passionate about building real things for real people. My interests include software engineering, embedded system development, mixed-reality interfaces, and robotics.













Skills

Python, Git, C/C++, Linux, Javascript, Typescript, React, Angular, Unity/C#, Java, Trello/Jira, MongoDB

#### Education

(2018 - \* M.S. in Computer Science ~ Emphasis: HCI / HRI

• University of Wisconsin - Madison, Madison, WI

Coursework: **Human Computer Interaction High Performance Computing** Artifical Intelligence + Wearables + Machine Learning + Adv. Computer Architecture

+ User Modeling + Computer Vision + Data Visualization

- Human Robot Interaction -

(2014 - 2018)B.S. in Computer Engineering ~ Emphasis: Embedded Systems

Milwaukee School of Engineering, Milwaukee, WI

Software Development Coursework: **Embedded Systems** 

+ Operating Systems + Computer Architecture + Digital / Analog Circuits + Data Structures + Control Systems + Computer Vision + Digital Signal Processing + Neural Networks

+ Computer Networking + Computer Graphics

- Engineering Practices -

# Experience (2019 -

Graduate Research Assistant ~ People and Robots Lab, Computer Sciences

O University of Wisconsin - Madison, Madison, WI

- Developed collaborative robot (cobot) authoring and training interfaces [Authr, Expert View Dashboard].

- Researched interactions with cobots for both attention management and levels of task interdependence.

- Worked with serveral colleagues outside of lab (in Human Factors and Optimization) to investigate cobot effectiveness when deployed on a variety of manual work activies.

- Contributed robot capability analysis as inputs into allocation algorithm.

- Contributed to lab infrastructure and processes.

Ex. Maintained centerialized robot description and configuration repository for lab.

Ex. Device bringup and documentation (Universal Robots UR3e, Microsoft Hololens 1 & 2).

Ex. Debugged and updated Robotiq gripper ROS drivers for colleague under paper deadline.

- Assisted colleagues with their user studies, technical development, and paper writing.

#### (2016 - 2018)**R&D Software Engineering Intern**

### Dedicated Computing, Waukesha, WI

- Responsible for development of embedded firmware in C/C++.

- Prototype server hardware and software systems [Matrix Storage, Fan Controller, OLED].
- Integrate embedded devices into server control software with Python.
- Developed internal hardware testing infrastructure [Thermal Chamber] with NodeJS, Python, and MongoDB.
- Contributed to product life-cycle documention for design, implementation, and testing.

## **Notable Projects**

#### Authr ~ Cobot authoring environment.

- Developed an Angular web app with ROS backend.
- Custom domain language designed around Therbligs.

# Expert View Dashboard ~ Cobot training environment.

- React web app with ROS backend and Unity simulation.
- Operationalizes expert thinking into a checklist novices use to develop their programs with custom domain language.
- Explored Microsoft Hololens as an alternate XR interface.

# Matrix Storage ~ Server Backplane Controller.

- Developed controller firmware with Atmel C.
  - Aggregates PSU, fan, and environment sensing and control for Linux node on I2C system bus.
  - Developed virtual register interface.
- Wrote Python interface between application and controller.
- Worked in an agile team; participated in standups.
  - Mentored by electrical and software engineers.

#### Automated Thermal Chamber Testing.

- Developed several subsystems:
  - Unit-Under-Test state scraper captures CPU and GPU configuration / sensor values with NodeJS.
  - Thermal couple monitor running on NI cRIO.
  - Chamber control server, with NodeJS, issues low-level TCP byte commands.
- Integrated subsystems into internal testing software.
  - Stored data from subsystems into MongoDB database.
  - Extended Typescript test runner to control subsystems.

# Programmable Fan Controller.

- USB UART with JSON API to configure programmable thermal profiles with individual fan control.
- Firmware written in C for Atmel ARM microcontroller.

#### OLED Node Display

Wrote firmware for OLED display with USB UART and capacitive touch buttons used to visualize node ID.



GPA: 3.7 / 4.0

GPA: 3.9 / 4.0

Buisness / Management

+ Ethics for Mgmt. and Eng.

+ Servant Leadership

+ Entrepreneurship



