Curt Henrichs

Software Engineer

Aspiration

I am passionate about building real things for real people.

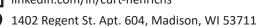
My interests include human-robot interaction, embedded systems, software engineering, and mixed-reality interfaces.













Skills

Python, ROS, Git, Atmel, C/C++, Linux, Javascript, React, Angular, Unity/C#, Keras, MATLAB, Movelt/Relaxed-IK

Education

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

• University of Wisconsin - Madison, Madison, WI

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

+ Machine Learning + 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

Coursework: **Embedded Systems**

+ Computer Architecture + Digital / Analog Circuits + Control Systems

+ Digital Signal Processing + Computer Networking

Software Development + Operating Systems

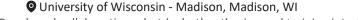
+ Data Structures + Computer Vision + Neural Networks

+ Computer Graphics

- Engineering Practices -

Experience

(2019 -Graduate Research Assistant ~ People and Robots Lab, Computer Sciences



- Developed collaborative robot (cobot) authoring and training interfaces [Authr, Expert View Dashboard].
- Researched interactions with cobots for both supervision tasks [pRAD] and levels of task interdependence.
- Worked with several 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 centralized 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++.
- Prototyped server hardware and software systems [Matrix Storage, Fan Controller].
- Integrated 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.
- Used Movelt to compute motion plans and time-of-flight.
- 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.

■ pRAD ~ Evaluation of cobot operator interfaces.

- Applies predictive robot attention demand (pRAD) to cobots.
- Developed two widgets (timeline and timer) evaluated for task and collaborative outcomes in human-subjects study.
- Captured design suggestions from participant interviews informing future implementation.

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.

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.
- Wrote Python interface between application and controller.

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.



GPA: 3.7 / 4.0

GPA: 3.9 / 4.0

Buisness / Management

+ Ethics for Mgmt. and Eng.

+ Servant Leadership

+ Entrepreneurship



