

Curt Henrichs

Software Engineer

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Aspiration

I am passionate about building real things for real people.
My interests include software engineering, embedded system development, robotics, and Maker culture.

Skills

Python, Git, C, C++, Atmel, Linux, Java, Trello/Jira, MATLAB, VHDL, Assembly (NIOS, MIPS, ARM) + Web Dev.

Education

(2018 - *)

M.S. in Computer Science ~ Emphasis: HCI / HRI

GPA: 3.7 / 4.0

📍 University of Wisconsin - Madison, Madison, WI

Coursework: Human Computer Interaction Artificial Intelligence High Performance Computing
+ 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

GPA: 3.9 / 4.0

📍 Milwaukee School of Engineering, Milwaukee, WI

Coursework: Embedded Systems Software Development Business / Management
+ Computer Architecture + Operating Systems + Servant Leadership
+ Digital / Analog Circuits + Data Structures + Entrepreneurship
+ Control Systems + Computer Vision + Ethics for Mgmt. and Eng.
+ Digital Signal Processing + Neural Networks
+ Computer Networking + Computer Graphics
- Engineering Practices -

Experience

(2019 - *)

Graduate Research Assistant ~ People and Robots Lab, Computer Sciences

📍 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 several colleagues outside of lab (in Human Factors and Optimization) to investigate cobot effectiveness when deployed on a variety of manual work activities.
 - 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).
- 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.
- Produce product life-cycle documents for design, implementation, and testing.
- Participated within company makerspace, developing several Arduino projects.



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.
 - 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.