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.

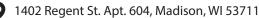


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Skills Python, Git, C/C++, Linux, Javascript,/Typescript, React, Angular, Unity/C#, Java, Trello/Jira, MongoDB

Education

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

• University of Wisconsin - Madison, Madison, WI

Coursework: Human Computer Interaction + 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

+ Digital Signal Processing + Neural Networks + Computer Networking + 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 serveral colleagues outside of lab (in Human Factors and Optimization) to investigate cobot effectiveness when deployed on a variaty of manual work activies.
 - Contributed robot capability analysis as inputs into allocation algorithm.
- Contributed to lab infrastructure and processess.
 - 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 Robotig 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.
- Produce product life-cyle documents 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.
 - 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



