904 W Green St, Urbana IL, 61801   fedders2@illinois.edu   (925) 899-8130

MATTHEW FEDDERSEN

EDUCATION

BS COMPUTER ENGINEERING, University of Illinois at Urbana-Champaign, May 2015

MS ELECTRICAL ENGINEERING, University of Illinois at Urbana-Champaign, May 2017 (expected)
- Focus on electric machines, power electronics, and superconductivity

WORK EXPERIENCE

TEST ENGINEERING INTERN, *Mabuchi Motors in Matsuhidai, Japan,* (Summer 2016)
- Designed and implemented tests to determine efficiency of a new product
- Assisted in the assembly and testing of an experimental motor controller

SOFTWARE DEVELOPMENT INTERN, *Eyefluence Inc. in Sunnyvale, CA,* (Summers/Winters 2013-2015)
- Wrote applications and APIs for eye tracking software on various Android-based head-mounted displays

TEACHING ASSISTANT, *UIUC ECE431: Electric Machines,* (Spring 2016)

RESIDENT DIRECTOR, *Hendrick House Dorms in Urbana, IL,* (2015-present)

RESIDENT ADVISOR, *Hendrick House Dorms in Urbana, IL,* (2013-2015)

RESEARCH EXPERIENCE

RESEARCH ASSISTANT, *University of Illinois, with Dr. Kiruba Haran* (2015-present)
- Paper: "Demonstration of a practical Nb3Sn coil for an actively shielded generator", ASC 2016
- Poster: "Optimal Configuration for a High Specific Power Superconducting Machine", ASC 2016
- Paper: "A Conduction Cooled Nb3Sn Racetrack Coil: Design, Construction, and Testing", PECI 2016
- Current Research: AC loss in fully superconducting machines; inverter design for high-speed motors

PROJECTS AND DISTINCTIONS

ILLINI FORMULA ELECTRIC
- Graduate Advisor (2015-present). Provide guidance and advice on various design aspects of the car, including battery pack assembly, circuit designs, systems integration, and rules compliance.
- Electrical Captain (2014). Led a team of students to design and build a fully electric race car. Designed a precharge circuit for the motor controller, led assembly of pouch-type Li-ion batteries into 300v packs, and oversaw electrical systems integration. The team placed 4th at the 2015 Formula Hybrid competition.
- Battery Subsystem Member (2013). Helped assemble and test the car's battery management system.

CS 431: EMBEDDED SYSTEMS (2016)
- Project: 2D drawing robot. I built the frame and pulley system, wrote software to convert coordinate inputs into stepper commands for the motor controllers, and integrated the software/hardware via a Raspberry Pi

ECE 445: SENIOR DESIGN (2015)
- Project: Wall outlet power monitoring with powerline communication. I designed the PCB and interfaced an MSP430 with an FSK modulation chip.

GORDON E. MOORE AWARD, INTEL INTERNATIONAL SCIENCE AND ENGINEERING FAIR (2011)
- Project: Simulated Treatment of Cancer with Photoelectric Effect-Produced Secondary Radiation

SKILLS

- English (fluent), Czech (highly functional), Spanish, French, Japanese (functional)
- C, C++, Java, Python, Matlab, Eagle, Solidworks, Ansys Maxwell and Mechanical, Microsoft Office