

# Michael Salino-Hugg

Email: [MichaelJSalinoHugg@gmail.com](mailto:MichaelJSalinoHugg@gmail.com) • Phone: (319) 572-2413 • Address: 418 Clark St., Iowa City, IA 52240

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## SUMMARY

Electrical Engineering PhD candidate with five years of experience conducting research in the areas of wireless power transfer, embedded systems, wireless sensor networks, and electromagnetic theory. Searching for entry-level industrial research position.

## EDUCATION

- **Ph.D. Electrical Engineering** *December 2019* ----- **University of Iowa, Iowa City, IA**
- **M.S. Electrical & Computer Engineering** *December 2018* ----- **University of Iowa, Iowa City, IA**
- **B.S.E. Electrical & Computer Engineering** *December 2014* ----- **University of Iowa, Iowa City, IA**
  - Minor: Mathematics

## WORK EXPERIENCE

**Graduate Research Assistant** *January 2017 - Present* ----- **University of Iowa, Iowa City, IA**

- **Adaptive MIMO Resonant Wireless Power Transfer**

- **Project Description:** System capable of transmitting several watts of power over mid-range (~1 meter.) System was controlled adaptively using receiver feedback.

- Documented effects of implementing multiple strongly-coupled resonant coils in a single system
  - Derived closed-form solution to nullforming problem to completely shield selected receivers
  - Designed and built semi-autonomous experimental setup
  - **Publications:** “*Adaptive Wireless Charging Using Resonant Coupling with Multiple Transmit Coils*”  
- Salino-Hugg, Andersen, Kruger, & Mudumbai; *IEEE IECON 2018*

**Embedded Systems Engineer** *July 2016 - May 2017* ----- **Self-Employed, Iowa City, IA**

- **Flexible Flash of Ophthalmology Research** ----- **FaceX LLC, Iowa City, IA**

- **Project Description:** Computer-controlled LED camera flash to operate in conjunction with multiple-camera arrays used in Ophthalmology research. System capable of emitting visible and IR light with variable frame delay, brightness, and exposure timings.

- **Publications:** “*A Flexible Electronic Flash For Ophthalmology and Visual Sciences Research*”  
-Salino-Hugg, Poolman, & Kruger; *IEEE SAS 2017*

- **User Biometrics Tracking Rifle** ----- **FaceX LLC, Iowa City, IA** • **Conflict Kinetics, Sterling, VA**

- **Project Description:** System embedded in airsoft rifle capable of tracking user’s eyes and facial expressions for use in a simulated combat environment.
  - Reprogrammed video streaming software for cameras with a shared oscillator and flash control
  - Redesigned flexible flash to reduce form factor, power consumption, and to allow rolling shutter cameras to act as universal shutter cameras

**Teaching Assistant** *September 2014 – Present* ----- **University of Iowa, Iowa City, IA**

- **Radio Frequency Electronics** *Spring 2018*
- **Principle of Electronic Instrumentation** *Fall 2016*
- **Wireless Sensor Networks** *Fall 2014*

**Undergraduate Research Assistant** *May 2013 - May 2015* --- **Iowa Institute of Hydraulic Research, Iowa City, IA**

- **Proton Precession Soil Moisture Sensor**

- **Project Description:** Investigation into using the proton precession of hydrogen atoms to detect the moisture content of soil samples.
  - Conducted literature survey of the physical phenomenon of proton precession and its applications
  - Designed, built, and tested active bandpass filter, current source, power amplifier, and timing circuit

- **Budburst Instrumentation System**

- **Project Description:** Collaboration with Oregon State University to create automated sensor to quantitatively log the opening (budburst) of various plant buds.
- Designed a lock-in amplifier for optically detecting budburst
- Interfaced ATmega32U4 with budburst, temperature, and internal moisture sensors
- Created custom circuit boards and built system
- **Publications:** “*Introducing a Sensor to Measure Budburst and its Environmental Drivers*”  
-Kleinecht, Lintz, Kruger, Niemeier, Salino-Hugg, Thomas, Still, & Kim; *Frontiers in Plant Science*, 2015

**Manufacturing Technology Engineer Intern** *May 2012 – August 2012* ----- **Du Pont, Fort Madison, IA**

- Organized and oversaw installation of shipping area lighting and automated valve on nitrogen pipeline
- Evaluated safety and cost concerns of lowering temperatures of emergency water supply tank
- Verified facility’s electrical drawings

**Student Employee** *January 2011 - May 2013* --- **University of Iowa: Engineering Electronics Shop, Iowa City, IA**

- Operated circuitboard mill, electroplater, and lasercutter
- Soldered, assembled, and tested Nerve Traffic Analysis System (medical research instrument)
  - Designed adapter board to replace discontinued isolation amplifier
- Modeled electrical component inventory in Multisim and Ultiboard

**APPLICABLE SKILLS:**

**Programming Languages:** C • C++ • assembly (AVR, MIPS, ARM) • Python • Lua • Javascript • VHDL.

**Embedded Platforms:** Raspberry Pi • Atmel MCUs/MPUs • Arduino • Beaglebone • Xbee • Intel Edison.

**Software:** MATLAB • LaTeX • Microsoft Office Suite • EAGLE • SPICE.

**ACADEMIC HONORS:**

- **Dean’s List** (G.P.A. 3.5 or above) ----- *Fall 2011 - Present*
- **Magna Cum Laude** ----- *Fall 2014*
- **Kurtz Senior Merit Award** (peer nominated) ----- *Spring 2014*
- **Undergraduate Poster Award: IIHR, Engineering Research Open House** ----- *Spring 2014*
  - “*Measuring Soil Water Content Using Proton Precession*”
- **Engineering Excellence Scholarship** ----- *Fall 2012 - Spring 2014*
- **Ray and Sara Latimer Engineering Scholarship** ----- *Fall 2012 - Spring 2013*
- **President’s List** (GPA 4.0) ----- *Fall 2011, Spring 2012*