Adam Cordingley

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Education

2016 – Present	**Case Western Reserve University (CWRU)**, Cleveland, OH *4th-year, B.S.E. Electrical Engineering candidate 2021*
Aug 2015 – May 2016	**Marshall University**, Huntington, WV *Part-time student - CS & Calculus II courses*
2012 – 2016	**Huntington High School**, Huntington, WV - *High School Diploma*

Experience

Sept. 2019 – Present	**Teaching Assistant - Applied Circuit Design (EECS 371)** *Case Western Reserve University - Cleveland, OH* Currently work for Prof. Lawrence Sears as a Teaching Assistant for CWRU's Applied Circuit Design (EECS 371) course.
May 2019 – Present	**Start-Up Co-Founder - Repowered Robotics, LLC** Co-founded Repowered Robotics, a start-up currently focused on developing an Ultra-Wideband-based Real-Time Localization System for autonomous robotics applications. We will be exhibiting our work at CES in January 2020.
Jan. 2019 – Aug. 2019	**Electrical Engineering Co-Op** *Bird Technologies, Inc. - Solon, OH* Continued work on a precision RF power measurment calorimeter. Also built a precision 500W source-measurment unit for said calorimeter, which makes it capable of self-calibration. Helped with a few side projects involving embedded design.
June 2018 – Aug. 2019	**Electrical Engineering Intern** *Bird Technologies, Inc. - Solon, OH* Worked on R&D of a precision RF power measurment calorimeter. Worked with embedded systems, digital interfacing, and control processes. Became familiar with Altium for Schematics and PCB design.
Aug. 2016– June 2018	**Web Support Staff** *Case Western Reserve Univ. - Cleveland, OH* I worked part time during the school year for Case Western's Web Support Dev Ops Integration team. I trained staff in using the Drupal content management system & provided university-website-related support.
Aug. 2016– Present	**Hardware Systems Engineering Lead** *Case Robotics Club (CWRUbotix)* Executive member of CWRU's student multi-project robotics club. I've been involved with the team since 2016 & have been on the club's Executive board for 3 years. This year, for the second time, I was elected to be the Hardware Systems Engineering Lead for the NASA Robotic Mining Competition team. I also manage the team's Altium component libraries. I periodically give lectures on hardware topics relating to robotics.
2015-2016	**Research Assistant** *Marshall University - Huntington, WV* Worked For Dr. Mike Norton at the Marshall Univ. Chemistry Department full time during the summer & part-time during the fall & spring semesters. I primarily worked with designing and fabricating parts (usually with FDM 3D printing) for use in research. I self-taught myself SolidWorks and learned to use NIH ImageJ. I also operated the lab's Scanning Electron Microscope (SEM) and several Atomic Force Microscopes (AFMs).
July 2017 & July 2016	**Youth Robotics Camp Instructor** *WV Summer Science Adventures, Marshall Univ. (ssawv.com)* I planned, organized, and led a one week Vex robotics day camp intended for junior high & high school students.

Skills & Certifications

SOLIDWORKS® Certified Associate - Mechanical Design (CSWA) - *December 2017*

Amateur Radio Operator, Technician Class (Callsign: KE8ITF) - *February 2018*

Software & Languages:

Proficient:	Windows, Linux, Microsoft Office, Altium Designer, Google Apps, LT-Spice, Git Python, C/C++, Java, Mathematica, HTML, CSS
Working Knowledge:	Intel Quartus, Verilog, C#, .NET, Linux Bash, LaTeX

Other:

- Circuit design, implementation, & debugging
- PCB Design
- Scrum / Agile methodology
- Embedded Systems & Embedded Programming
- Systems Engineering
- FDM 3D printing

Engineering Coursework

- Applied Circuit Design (EECS 371)
- Electronic Circuits (EECS 245)
- Logic Design & Computer Organization (EECS 281)
- Python & Java (Marshall Univ.)
- Digital Logic Laboratory (EECS 301)
- Intro to Circuits & Instrumentation (EECS 210)
- Intro to Programming in Java (EECS 132)

Other Projects

- **Musical Tesla Coils:**

  In early 2019, I became interested in building a musical tesla coil. I wanted to build a solid-state continuous wave driver that would produce sound by modulating the power of the arcs (rather than firing the coil at audio-frequency intervals). I had seen a design on the internet that worked on a similar continuous-wave principle, but with several drawbacks & issues which I planned to solve in my design. By June of 2019 I had my first working prototype. It plays music with arcs at about 350kV. I immediately began a design of a new coil, power supply, & driver with a goal of reaching 1MV arcs. I completed my design of this larger, more powerful driver by October of 2019. I'm buliding up that prototype currently. Details of these designs can be found on my website (acordingley.us).

- **CWRUbotix**
  - **Leadership:**

    As mentioned in my "Experience" section, I've been involved in CWRU's student robotics team since 2016. I've been an elected member of the club's executive board since my sophomore year. We are a multi-project robotics club that competes annually in several robotics competitions – the NASA Robotic Mining Competition (RMC), the MATE ROV competition, and several hosted by the National Robotics Challenge (NRC). I've seen steady growth of our club even in the last 3 years – last year we had approximately 70 active members and a budget of about $29,000. In the 2018-19 competition season, I was elected to be the Hardware Systems Engineering Lead for the NASA RMC team – the competition is to build an autonomous off-world mining robot, designed to mine icy Lunar/Martian regolith in a simulated off-world environment. I was elected to this position again for the 2019-20 season. In this role, I lead our hardware team, make high level decisions about all electrical systems and electronics on the robot, and contribute to writing our Systems Engineering Paper, for which we were awarded 3rd place in 2019. I also managage the team's Altium component libraries.

  - **Custom Electronics:**

    Through CWRUbotix, I've been in charge of several custom electronics components for different robots. The most complex & arguably most successful was the "hardware controller" for our NASA RMC robot in 2018-19. It provided an interface between the autonomy computer & all motors and sensors on the robot. It handled process control & parsed sensor data so it would be useable by the autonomy subsystem. The second most successful design was a Real-Time Localization System (RTLS) using Ultra Wideband transceiver modules connected via CAN bus. Each module uses a Decawave DWM1000 transceiver and an STM32F1 series microcontroller. The devices are a success and will be used with our robot for this year's NASA RMC.

  - **Robotics Hardware Lectures:**

    Over the last 2 years in CWRUbotix, I have given around 20 lectures about robotics hardware, covering topics such as electrical architecture & interfaces, PCB design, motor selection and power calculations, technical decision making, and other topics.

- **Vex Robotics Mentorship:**

  I mentor several Vex Robotics teams at Cleveland Heights High School.