# Curriculum Vitae/Resume

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## Education

**University of Michigan - Ann Arbor, MI** **GPA: 3.991**
Undergraduate Major: *Computer Engineering* Expected graduation date: May 2016

**TECNUN University Semester Abroad-** San Sebastian, Spain Winter 2014
**KNUST University Summer Abroad –** Kumasi, Ghana Summer 2013

**Relevant coursework:** digital signal processing, computer vision, discrete math, data structures and algorithms, design of microprocessor systems, computer architecture, methods in probability, autonomous robotics (registered for winter 2016), operating systems (registered for winter 2016), phylogenetic methods, plant-animal interactions

## Publications, Presentations, and Awards

- **Co-primary author of "Ving: Bootstrapping the Desktop-Area Network" –** presented published work in the ACM's Hot Wireless Workshop 2015, Paris, France
- **Presented "Rumblecation: Communication with Vibratory Motors and Accelerometers" –** poster and presentation at the Michigan Design Exposition, Ann Arbor MI, December 2014
- **Presented "Effects of prostheses on the metabolic cost of walking for lower-limb amputees" –** poster and presentation at the Michigan Research Community Symposium, Ann Arbor MI, January 2013
- **NSF REU Undergraduate Research Award –**grant to support summer biotelemetry research project ($1,500 award)
- **Electrical Engineering and Computer Science Outstanding Achievement Award –** awarded to the top student in computer engineering at the University of Michigan for academic performance and leadership qualities ($500 award)
- **Marian Sarah Parker Prize-** awarded by the University of Michigan to an outstanding woman undergraduate who has demonstrated academic excellence and leadership qualities ($1,000 award)
- **Darl F. and Lorene O. Caris Dean's Merit Scholarship full-ride ─** four-year full-ride scholarship awarded by the University of Michigan College of Engineering to a single student based on academic achievement ($130,000 award)
- **Regents Merit Scholarship** – Merit based scholarship awarded by the University of Michigan ($8,000 award)
- **University Honors and Deans List** – each semester 2012 through present

## Experience

**Marine Animal Biotelemetry Researcher** – Woods Hole Oceanographic Inst. **January 2015-Present**
- Developed MATLAB algorithms to process data collected from ITAG, a custom embedded animal biotelemetry device
- Designed modification to sensor board, allowing the addition of peripheral sensors through I2C communication bus
- Designed and ran live experiments on squid carrying biotelemetry devices at the Woods Hole Shore Laboratory
- Manuscript "A Day in the Life of a Squid: Modeling Marine Animal Behavior using Inertial Sensors" in preparation, to be submitted to *Animal Biotelemetry*

**Internet of Things Embedded Systems Researcher -** University of Michigan **September 2014- May 2015**
- Designed and prototyped custom embedded hardware to transmit and receive vibratory communications
- Developed on-off keying modulation and signal processing firmware to interpret vibratory signals in real-time
- Presented published work in the ACM Hot Wireless Workshop 2015, Paris, France

**Robotic Prosthesis Researcher–** University of Michigan **September 2012-December 2013**
- Designed and developed foot attachment that monitors level of sole deflection and provides visual feedback for user
- Responsible for microcontroller programming using low-level C language
- Worked with ARM architecture microcontrollers and peripheral communication

**Software Product Development Intern at FANUC Robotics America –** Rochester Hills, Michigan **Summer 2014**
- Developed a user-friendly, cross-browser compatible web interface for FANUC robot controllers
- Programmed robot showcase application for the International Machine Tools Show
- Gained proficiency in HTML, CSS, JavaScript and received FANUC robot safety and control training

## Projects and Software

**Structure from Motion Computer Vision Android Application** **December 2015**
- Developed Android application using BoofCV, a native Java computer vision library, that implements multi-view, three-dimensional scene reconstruction and visualization using a smartphone camera and onboard processing

**Musical Auto-tuner Digital Signal Processing Application** **December 2015**
- Developed MATLAB algorithms to sample music from a guitar then segment, tune notes, and replay sample

**Vibratory Communication Embedded System** **December 2014**
- Designed printed circuit board and low level firmware to support vibratory communications by on-off keying modulation
- Open-source hardware design and firmware available at: https://github.com/lab11/ving

## Outreach and Teaching

**Woven Wind Engineering Project Electrical Leader –** University of Michigan **September 2012-Present**
- Led a team of twelve to design the electrical system of a fifteen-foot wind turbine for a fifth grade classroom
- Developed and led monthly educational workshops focusing on STEM topics for the classroom
- Designed and printed custom turbine-braking circuit PCB, allowing hardware and software turbine safety shut-off

**Girls in Electrical Engineering and Computer Science Mentor –** University of Michigan **September 2015- Present**
- Led weekly group sessions to mentor and support girls in introductory programming classes at the University of Michigan

**Michigan Research Community Peer Mentor –** University of Michigan **September 2013 – January 2014**
- Supported first-year students at the University of Michigan during their initial research experiences

**Sustainable Community Design Instructional Aide –** University of Michigan **December 2012-December 2013**
- Led weekly classes in an introductory engineering course based on building partnerships with community leaders and promoting sustainable engineering in the Detroit, MI area

## Skills

***Software:***
- C, C++, MATLAB, basic Verilog Hardware Description Language, HTML, Java

***Hardware:***
- Experience with EAGLE printed circuit board (PCB) design, PCB assembly, and surface mounting technique
- Worked extensively with ARM architecture microcontrollers, including basic ARM assembly programming