# Ian C. Hartwig

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San Francisco, CA

## Education:

### Degree

*May 2016* **Carnegie Mellon University**
M.S. Electrical & Computer Engineering

Select courses:
- 18-623 Analog Integrated Circuits
- 18-625 Mobile and Server Product Design
- 18-649 Distributed Embedded Systems

*May 2015* **Carnegie Mellon University**
B.S. Electrical & Computer Engineering

Select courses:
- 18-578 Mechatronic Design
- 18-474 Embedded Control Systems

*Aug. 2011*
- 15-410 Operating Systems

### Skills

- ECAD – *Orcad, Allegro, KiCAD, Eagle, Altium*
- EE Power – E-Load, Diff-Probe, Thermal Chambers, LVDC, 3-Phase AC
- EE Protocols – *CAN, PCIe, I2C, SPI, Ethernet, USB, JTAG, I2S*
- EE Rework – *for 01005+, QFN, BGA, CSP*
- Simulation – *Spice, Impedance & Stackup*
- Programming – *C, Python, Linux / Bash, Java*
- Data Science – *Pandas, Tableau, Salesforce*
- Web – *HTML, CSS, JS, SQL, PHP*
- MCAD – *AutoCAD, Solidworks, Fusion360*
- Machining – *Metals & Plastics, Mill, Lathe, Laser Cutting, CNC Router*

## Experience:

### Industry

*Present* **Platform Hardware Engineer**
Embark Trucks, San Francisco, CA

- Lead requirements-driven design for new truck series interior & compute integration
- Intel + NVIDIA HPC upgrade plan, integration
- ECU harness and patch panel HW design with review & revision control, CM production
- AC & LVDC power design and integration

*Aug 2018* **Hardware Engineer**
Pure Storage, Mountain View, CA
*FlashArray fault-tolerant x86 server design team*

- HW Design Lead on new NVMe product
- Future Memories & Interfaces Analysis
- Multiphase Buck Validation for Intel CPUs
- Design Review & Validation for PCIe 3, NVMe, RoCE 2, 10G+ Ethernet, 12G SAS
- Field Failure Analysis of all FlashArray HW for execs. - Python/Pandas, Salesforce, JIRA

*July 2016*

*Aug. 2015* *FlashArray Intern*

- Developed tools to validate and margin first-gen NVMe FlashModule designs
- SMD rework, measurement, threaded FW development in C, and test scripts in Python

*May. 2015*

*Aug. 2014* **Hardware Engineering Co-Op**
Apple, Cupertino, CA
*iOS Device Accessories*

- Drove SCH & PCB for dev. kits in lockstep with engineers on Battery Case and AirPods
- Sparked test equipment automation collaboration in Python to save engineer time

*Jan. 2014*

### Academic

**FIRST Robotics Engineering Mentor**
FRC 5026, Burlingame, CA
*Guide dynamic group of 30+ high school students in mechanical and electrical design of custom 150 lb. robot in 6 weeks.*
- Design reviews, strategy, hands-on tutorials
- High pressure debugging assistance at local and travel competitions
- 2019 World Championship win with alliance teams FRC 1323, 973, 4201

**Embedded Real Time Sys. (18-349) TA**
ECE Department, CMU
- Wrote labs and exams focused on ARM in C
- Designed lab kit HW around Raspberry Pi
- Built check-in workflow on private Gitlab

github.com/ihartwig/raspberrypi-debugger
github.com/ihartwig/rpi-labio

**Embedded System Design (18-549) TA**
ECE Department, CMU
*Project mentor. Coursework in HW design.*

**AB Tech Executive Board**
*Live audio engineer and electrician for student-run entertainment productions company.*
- 2-64 ch. Analog & Dante Networked PAs
- 100-600A 3-phase AC power systems
- Reviewed capital purchases and training

## Projects:

*May 2016* **Ace Monster Toys RFID Entry**
*Extended RFID locks at hackerspace in Oakland, CA. Custom microcontroller HW and SW with power relays and USB data.*
github.com/ihartwig/amtdoor3

*Jan. 2014* github.com/ihartwig/amtdoor2

**Robotic Buggy**
*Built a self-guiding, gravity-powered vehicle with the CMU Robotics Club. Embedded SW, HW system integration, and power delivery HW.*
github.com/CMU-Robotics-Club/RoboBuggy
upverter.com/ihartwig/d0e344870ae6db06