

# Brandon Wood

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## EDUCATION

**CORNELL UNIVERSITY**  
ELECTRICAL AND COMPUTER  
ENGINEERING  
Expected December 2023

### RELEVANT COURSE WORK

- Advanced Analog RF IC Design
- Analog CMOS Integrated Circuit Design
- Complex Digital ASIC Design
- Digital Signal Processing
- Introduction to MEMS

## SKILLS

### PROGRAMMING

Python • C • MATLAB • OCAML

### CAD

AWR • Altium • Cadence Virtuoso  
• KiCAD • SOLIDWORKS

### SIMULATION

AWR (AXIEM) • LTSPICE • ANSYS HFSS  
• PLECS

### LAB EQUIPMENT

VNA • Power Meter • Oscilloscope •  
Digital Decoder • Spectrum Analyzer

## PROJECTS

### NEURAL DUST

Acoustic Backscattering for Neural Spike Detection: designed amplifier, rectifier and matching network for interface between piezoelectric sensor and IC. IBM 90nm process in Cadence.

### C-BAND GRILL

Ran simulations and designed waveguides and matching networks for cooking a hotdog at 6Ghz

### QUAD CORE PROCESSOR

Developed a quad-core, fully bypassed single-issue processor in system verilog. Wrote over 10,000 lines of python (PyMTL3 and PyTest) to verify. Evaluated several workloads and wrote a multi-threaded sorting algorithm.

### 100V BOOST CONVERTER

Designed and built boost converter to take disposable 9V battery to 100V

## EXPERIENCE

### WOLFSPEED | RF APPLICATIONS INTERN

Jun.-Aug. 2022 | Raleigh, NC

- Given an existing 5W MMIC PA and a new potential target market, performed a load and source pull in AWR, then used that data to select a new bias point and to design new matching networks
- Assisted in generating specifications, designing matching networks, and making measurements for existing RF PA products for several aerospace and defense customers (variety of bands, power levels and missions)

### SECOND ORDER EFFECTS | ELECTRICAL ENGINEERING INTERN

May 2021 - May 2022 | El Segundo, CA

- C-Band LO Module for Low Earth Orbit Missions
  - Designed, tested, and brought-up PLL for 6Ghz Synthesizer Module
  - Designed, tuned and tested matching stub (in ENiG microstrip) for microwave power amplifier to optimize return loss while minimizing impact on P1DB
  - Generated thermal and power budgets which informed client's vehicle redesign
- Engine Controller Unit for Geostationary Orbit Missions
  - Wrote error budget, selected topology and designed high precision ( 1uA) analog front end for ADC
  - Performed noise analysis to inform error budget
  - Designed, analyzed and validated two-terminal current limiter
- Identified transformer core saturation issue with switching power supply design. Updated topology and closed out functioning design
- Wrote and executed several test campaigns including pico-amp leakage current measurements, microwave compression curve measurement, RF phase noise measurements, and high power (200W) C-Band circulator stress testing
- Experience ( 1 year over four projects) using mission specifications and public radiation data to identify radiation-tolerant COTS parts

### DREAM ON | ELECTRICAL ENGINEERING INTERN

Jun.-Sep. 2019 | Brooklyn, NY

- Updated SMPS layout near patch antenna, reducing EMI and allowing Bluetooth link budget to close
- A new haptic feedback motor was needed for an update of the main product line. Wrote specifications for the new motor and carrier through final design

### CORNELL SA CUP ROCKETRY | ELECTRICAL TEAM LEAD

Sep.2019 - Feb.2021 | Ithaca, NY

- Designed, brought-up and documented several boards including RF transceiver modules, central flight computer, central power supply, and data acquisition boards
- Improved recruiting and outreach in order to double ES team size
- Developed teaching materials for topics spanning RF communication protocols (AM, FM, QSPK, etc.), EMI layout, BJT and MOS biasing and selection, and switching supplies