

Brandon Wang

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EDUCATION

The Ohio State University

Columbus, OH

B.S. in Electrical Engineering | Land Grant Scholarship (Full Ride)

Expected May 2027

Areas of Interest: Circuit Design, Radio Frequency (RF), Wearables, Medical Devices, Consumer Electronics

ACADEMIC RESEARCH

Wearable and Implantable Tech., Electrosience Lab | Undergraduate Researcher

Columbus, OH

Project (1): RF Integrated Interactive Wearable Device

Aug. 2025 - Present

Skills: EasyEDA Pro, LTspice, nRF52840 (MCU), LSM6DS3TR (IMU), CircuitPython, Network Analyzer

- Leading hardware design for a **wearable game controller** for kids, in collaboration with Nationwide Children's Hospital
- Designing **12MHz transmitter/receiver** pair **schematic and layout**, meeting a **40mm** max footprint requirement
- Developing low-latency **embedded firmware** for the **nRF52840 SoC** to process real-time **analog-to-digital** inputs
- Expanded system input capability by **200%** by integrating analog **IMU** and **Force-Sensitive Resistor (FSR)** sensors
- Optimized for passband frequency and signal integrity by simulating and implementing custom **Chebyshev filters**

Project (2): Magnetocardiogram (MCG) Sensors

Jan. 2024 - Jan. 2025

Skills: MATLAB, LABVIEW, Empirical Mode Decomposition, Coil Array Design, MCG & ECG Apparatus, Fusion360

- Simplified MCG testing setup, reducing complexity by **50%** and improving the **signal-to-noise ratio (SNR)** by **10%**
- Wrote a **signal processing** program in **MATLAB** using **EMD algorithm** to extract averaged frames from large datasets
- Built a **LabVIEW GUI** to simultaneously collect and synchronize data from both MCG and electrocardiogram systems
- Created a new coil array housing to boost testing efficiency and enabling color customization when testing with children

WORK EXPERIENCE

GE Appliances | Electrical Engineering Co-op

Louisville, KY

Dept (1): Dishwashers, New Product Introduction

May 2025 - Aug. 2025

Skills: Cadence Allegro, Python, Tableau, Automation, FRACAS, Oscilloscope, ESP32, Management

- Drove long-term design improvements and reliability by conducting **root cause analysis (RCA)** on 3 unique **FRACAS**
- Managed over **100+** dishwashers in field tests, ensuring up-to-date software, continuous operation, and test reliability
- Designed a **ESP32 shield** with **VL53LOX IR sensor** in **Cadence Allegro** to transmit distance data with **90%** accuracy
- Built a **Python** automation tool to manage weekly OTA software and health checks, eliminating **95%** of manual effort
- Reworked dishwashers in test labs to integrate a new LCD from an alternate manufacturer, ensuring **100%** functionality

Dept (2): Refrigeration, Cost of Quality

Jan. 2025 - May 2025

Skills: Root Cause Analysis, ALT, ESD Testing, PCB Rework, Oscilloscope, Multimeter, Ultrasonic Sensors

- Used **accelerated life testing (ALT)** methods to evaluate and compare the long-term reliability of multiple LED models
- Designed test board panels to efficiently compare **5+** different LED color temperatures and its effect on food appearance
- Performed **electrostatic discharge testing** to locate common power rail failure in multi-door refrigerator main boards
- Validated reliability of new ultrasonic sensors by testing performance across varying sensitivity and coupling parameters
- Performed in-depth **RCA** on refrigerator PCBs to identify manufacturing defects and enhance overall quality control

KEY PROJECTS

Rotisserie Function For Indoor Meat Smoker

- Prototyped a modular H-bridge AC motor controller with main voltage rail isolation to enable variable speed control
- Integrated an AC motor and light into the existing indoor smoker system with minimal structural and electrical changes

Assistive Device for Push Strollers

- Created an adaptable stroller attachment to ease physical demands of caregiver by assisting in pushing a stroller up hills
- Integrated ratchet systems in wheel hub to enable coasting at higher speeds without additional resistance from motor

TECHNICAL SKILLS

Design Software: Cadence Allegro, KiCad, EasyEDA Pro, LTspice, Tableau, LabVIEW, Fusion360, Solidworks, Windchill

Benchtop Tools: Oscilloscope, Digital Multimeter, Spectrum Analyzer, Waveform Generator, Power Supply, SMD Soldering

Embedded & Firmware: MATLAB, Python, MCUs (ESP32, nRF42840, Arduino), CircuitPython, I2C/SPI, C++