### Vivian Zeru

Willing to Relocate | 502-415-1280 | vivianzeruportfolio.vercel.app | vivian.zeru@vanderbilt.edu | www.linkedin.com/in/vivian-zeru/

### TECHNICAL SKILLS

Hardware Design/Simulation: Cadence (with Amazon WorkSpaces) for VLSI Design, Eagle, Altium, SPICE (LTSpice), Verilog, Intel Quartus/ModelSim, Fusion 360

Hardware Debugging/Assembly: Oscilloscopes, Multimeters, Function Generators, DC Power Supplies, SMD Soldering (QFN/WLCSP), Soldering Irons, PCBA

Embedded Systems: Arduino (C++), Python (Raspberry Pi) STM32 (C), Assembly (AVR, RISC-V)

Masters Coursework: Advanced Digital Electronics (Transistor-Level Digital Circuit Design), VLSI Design (Cadence, AWS), Electronics 2 (Analog Circuits)

Bachelors Coursework: Microelectronic Systems, Microcontrollers (AVR), Electronics 1, Electromagnetics, Analog Circuits/Systems, Digital Systems (RISC-V), Rapid Prototyping (Arduino, Fusion 360 CAD)

# Undergraduate Research Assistant: Hardware Team | Du Group Vanderbilt

Feb 2025 -Present

• Designing novel eye-tracking PCB in Eagle for medical applications (automony, etc.).

- Executed precise SMD soldering techniques on QFN/WLCSP microscopic components for high-reliability assembly (PCBA) on 1 wearable hardware sensor for ECG, EEG, and NIRS health monitoring.
- Debugged and validated low-power wearable PCB with multimeters and firmware flashing, enabling functional

- Solidworks-designed 3D-Printed box; debugged to improve layout signal integrity.
- Decreased microcontroller power consumption by 99.9% (150 mA to 20 μÅ) using deep sleep mode every 15 seconds.

June 2024 - August 2024

- application in production today for 2285 monthly users; selected to present to executive leadership for clarity and technical depth.
  - Created real-time asset tracking app in 24-hour hackathon, enabling \$33M savings; selected top 9 of 53 teams.

#### EDUCATION

MS in Electrical & Computer Engineering Vanderbilt University (GPA: Start Aug 2025) Aug 2025 - May 2027 BE in Electrical & Computer Engineering | Vanderbilt University (GPA: 3.64) Aug 2023 - May 2027 Projects

Custom ESP32 Environmental PCB Sensor | Eagle, System-Design, PCB Design, I2C, C++ Summer 2025 • Developed 2-layer PCB (schematic+layout) in Eagle to detect temperature, humidity, pressure, & altitude with BME280.

- Developed system with USB-C, 5-3 V LDO, 40 kHz Crystal, CP2102 USB-UART, I2C, & C++ firmware.
- Achieved 25% size reduction with ICs; manually routed layout to ensure signal integrity for manufacture-ready

Plant Health Monitoring Device | Eagle, System-Design, PCB Design, I2C, C++ Summer 2025

- Created ESP32 module powered Eagle PCB and firmware (C++) to detect plant needs (BME280, soil moisture, BH1750).
- Developing IC design to decrease space & control design; implementing ML processing to predict next plant

July 2025

- 4-Bit ALU (Arithmetic Logic Unit) | Verilog, Synopsys VCS, Digital Systems

   Implemented 2 scalable design methodologies in Verilog: behavorial (cases) & structural (gate-level hardware).
  - Built 1 testbench for 100% design verification, Synopsys VCS simulating 6.74% decrease in CPU runtime (structural).

## Awards

Accelerated Graduate Program in Engineering | Receiving MS/BE degrees in 4 years January 2025 Cornelius Vanderbilt Scholar | Given to <1% of applicants for high academic and community achievement April 2023 Leadership Experience

## Lab Proctor and Founding Member | ECE Tech Crew

Feb 2024 - Present

- Trained 9 students in Keysight tools for debugging circuits in senior design & research (oscilloscopes, multimeters).
  Drove membership from 7 to 30+ with merchandise, flyers, signs; communicating on Slack/email with students &
- Managed ECE Makerspace 2-3 hours weeky to ensure the safety/quality of components and help students with electronics projects.
- Chosen to present to the ECE External Advisory Board ( 10+ faculty ) at Vanderbilt on behalf of the
- 2025 Vice President and Fall 2024 Secretary | Engineers Without Borders

Oct 2024 -Present

• Manage internal/external logistics and communicate to 10+ members via weekly emails & 8+ Instagram posts.