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)

Experience

Undergraduate Research Assitant: 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 biosensor.

Electronics Engineer for Stormwater Runoff Device | *Engineers Without Borders* *Sept 2023 –Present*
- Designed 2-layer PCB (EasyEDA) with ESP8266 & sensors to decrease space & fit mechanical-design constraints for Solidworks-designed 3D-Printed box; debugged to improve layout signal integrity.
- Decreased microcontroller power consumption by ***99.9%*** (150 mA to 20 μA) using deep sleep mode every 15 seconds.

Information Services Management (ISM) Intern | *UPS* *June 2024 – August 2024*
- Developed/deployed scheduling feature for nationwide aircraft maintenance employee management system 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 device.

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 watering.

4-Bit ALU (Arithmetic Logic Unit) | *Verilog, Synopsys VCS, Digital Systems* *July 2025*
- 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 & faculty.
- 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 organization.

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.