Vivian Zeru

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vivian-zeru

Education

Vanderbilt University *Aug 2023 – May 2027*
BE in Electrical and Computer Engineering

- GPA: 3.64/4.0
- **Coursework (Completed by Summer 2026):** Microelectronic Systems, Microcontrollers, Embedded Systems, Electronics 1, Electromagnetics, Analog Circuits/Systems, Digital Systems (RISC-V), Circuits
- **Cornelius Vanderbilt Scholar:** Awarded scholarship to less than 1% of applicants for merit-based leadership and community achievement.

Vanderbilt University *Aug 2025 – May 2027*
MS in Electrical and Computer Engineering

- **Coursework (Completed by Summer 2026):** Electronics 2, Advanced Digital Electronics, VLSI Design
- **Accelerated Graduate Program in Engineering:** Accepted for reaching senior standing by end of sophomore year (86 credits required, 92 completed) & 3.5+ GPA to earn 2 degrees simultaneously in 4 years.

Experience

Undergraduate Research Assistant - Electrical Engineering Team *Nashville, TN*
Du Group Vanderbilt *Feb 2025 - Present*

- Reverse-engineer PCB electrical schematic/layout to learn low power design & circuit design principles for pH sensor.
- Executed precise SMD soldering techniques on QFN/WLCSP microscopic components, achieving high-quality assembly standards on 1 wearable hardware sensor for health monitoring (ECG, EEG, NIRS).
- Applied SMD soldering μm precision (hand-placed QFN/WLCSP components) to wearable health sensors, matching machine assembly tolerances.

Vice President (2025), Secretary (Fall 2024), Electronics Engineer (Stormwater Runoff Device, EPA Rainworks Project) *Nashville, TN* *Sept 2023 - Present*
Engineers Without Borders USA - Vanderbilt University Chapter

- Debug device, utilizing ESP8266, ADC, calibrated sensors (turbidity, soil moisture, conductivity, flow rate, pH), and designed 2-layer PCB (EasyEDA) to replace breadboard, decreasing electronic space while maintaining signal integrity.
- Optimized low power consumption from microcontroller (150 mA to 20 μA) using deep sleep mode every 15 seconds.
- Manage internal/external logistics and communicate to members via weekly emails & 8+ Instagram posts.

Lab Proctor and Founding Member *Nashville, TN*
ECE Tech Crew *Feb 2024 - Present*

- Train 9 lab proctors and enhance student support with Keysight test equipment (power supply, multimeter, oscilloscope, waveform generator, soldering irons) on senior design projects, research, hobbyist work.
- Drove membership from 7 to 30+ members by creating merchandise, flyers, signs, and posters while streamlining communication on Slack and email between students and ECE faculty.
- Chosen to present to the ECE External Advisory Board (10+ faculty) at Vanderbilt on behalf of the organization.

Information Services Management (ISM) Intern *Louisville, KY*
UPS (United Parcel Service) *Jun 2024 - Aug 2024*

- Implemented add/edit ability to facilitate scheduling information for Employee Management System application using Angular, Java, SQL (full-stack development), which is still used today nationwide.
- Delivered end-of-summer presentation to 20 interns & leadership; selected as 1 of 2 interns to present to OPT President and was praised for clear understanding of complex application in a short time frame.
- Developed a real-time asset management application with a Google Maps dashboard to increase automation & save $33M by decreasing lost assets during a 24-hour hack-a-thon in collaboration with 4 teammates; selected top 9 of 53 teams.

Projects

Weather Station *Aug 2022 - May 2023*

- Built an environmental monitoring system by writing firmware (C++) for an Arduino and interfacing with a BME280 sensor, displaying real-time temperature, humidity, pressure, and altitude data on an LCD.
- Designed a color-coded RGB LED system (6 gradients) to visually represent temperature ranges (red → blue).
- Designed a custom enclosure (OpenSCAD) and hand-soldered wire connections to reduce device footprint.

Skills

Programming: C/C++ (Arduino IDE), Python, MATLAB, SystemVerilog, Assembly, Angular, Java

Hardware/Software: Eagle, Spice (LTSpice), Altium, Intel Quartus, ModelSim, Mathematica, Fusion 360

Lab & Tools: Oscilloscope, Multimeter, Waveform Generator, Power Supply, SMD Soldering, Soldering Iron, PCB Prototyping