## Vivian Zeru

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

### EDUCATION

MS in Electrical & Computer Engineering | Vanderbilt University

Expected May 2027

• Accelerated Graduate Program in Engineering: Receiving MS/BE degrees in 4 years concurrently.

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

Expected May 2027

BE in Electrical & Computer Engineering | Vanderbilt University (GPA: 3.64) Expected A

• Cornelius Vanderbilt Scholar: Awarded to <1% of applicants for high academic/community achievement

• Coursework: RF & Microwave Design, Microelectronic Systems, Analog Circuits/Systems, Electronics 1, Electromagnetics, FPGA Design, Microcontrollers (AVR), Rapid Prototyping (Arduino, Fusion 360 CAD)

### HARDWARE EXPERIENCE

# Undergraduate Research Assistant: Hardware Team | SYMBIO-X Lab

Feb 2025 -Present

- Integrated and developed mixed-signal Eagle PCB schematics for wearable medical devices, including EDA schematic capture and chip selection for EEG sensor, with emphasis on miniaturization & ultra-low power design.
- Executed precise SMD soldering of QFN/WLCSP components for high-reliability PCBA on two wearable biosensor platforms, ensuring functionality and signal integrity.
- Performed system-level validation of low-power wearable PCBs using multimeters and firmware flashing, enabling functional biosensors.

Electronics Engineer for Stormwater Runoff Device | Engineers Without Borders

Sep 2023 -Present

- Assisted in hardware design of a 2-layer sensor PCB (EasyEDA) to reduce device footprint; collaborated with mechanical teams on system integration within a 3D-printed enclosure.
- Decreased microcontroller power consumption by 99.9% (150 mA to 20 μA) using deep sleep mode every 15 seconds in collaboration with programming/CS teams.

Undergraduate Laboratory Assistant and Lab Proctor | ECE Tech Crew

- Assisted students in Electronics 1 Laboratory in analyzing, debugging, & designing diodes, MOSFETs, BJTs, amplifiers, and CMOS circuits.
- Managed ECE Makerspace 2-3 hours weeky to ensure component safety/quality and help students with projects.

# HARDWARE PROJECTS

**4-Bit Multiplier IC** | Cadence Virtuoso, HSPICE, Hierarchical Design, Physical Verification

Sep 2025

- Designed/implmeneted complex 4-bit multiplier IC using hierarchical methodology, constructing the system from transistor-level standard cells into 4 half-adders and 8 full-adders to implement the multiplication algorithm.
- Conducted full physical verification and pre/post layout simulation in HSPICE to increase reliability.

Custom ESP32 Environmental PCB Sensor | Eagle, System-Design, PCB Design, I2C, C++ *Jun - Aug 2025* 

- Developed board design for 2-layer Eagle PCB sensor system prototype (schematic + board layout) to detect temperature, humidity, pressure, altitude: BME280.
- Completed hardware system integration with USB-C power integrity delivery system with low-noise LDO regulator & 40 kHz crystal oscillator for stable operation.
- Optimized board layout for miniaturization, achieving a 25% size reduction while manually routing to ensure signal

VLSI Gates & 4-Bit Adder ICs | Cadence Virtuoso, AWS, VLSI Design, Backend Design

Aug - Sep 2025

- Designed a 45 nm node standard cell library (Inverter, NAND, NOR gates) at the transistor level, optimizing cell layout for area/performance with a 10-track height design.
- Designed half-adder, full adder, 2-bit adder, 4-bit adder, utilizing hierarchal layout design & optimized NAND.
- Conducted full physical validation (DRC, LVS, PEX) to ensure manufacturability, resulting in a clean, tape-out ready standard cells.

### LEADERSHIP AND PROFESSIONAL EXPERIENCE

Founding Member | ECE Tech Crew

Feb 2024 - Present

- Trained 9 students in Keysight tools for debugging circuits in senior design & research (oscilloscopes, multimeters).
- Grew organization membership by >300% (7 to 30+ members) through targeted marketing/outreach initiatives. • Chosen to present to ECE External Advisory Board & national ABET accreditation for success in ECE.

2025 Vice President and Fall 2024 Secretary | Engineers Without Borders

Oct 2024 -Present

• Fostered strong internal and external stakeholder relationships by managing logistics and communicating initiatives to a 10+ member team, driving project continuity.

Information Services Management (ISM) Intern | UPS

Jun 2024 - Aug 2024

- Presented technical project results to executive leadership, demonstrating advanced communication skills.
- Collaborated on a cross-functional team in high-pressure hackathon to develop prototype, finishing top-9/53 teams.

#### Technical Skills

Hardware Design/Simulation: Eagle, Altium, SPICE (LTspice), Fusion 360 (CAD), Cadence Virtuoso (VLSI)

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

PCBA. Function Generators

Embedded Systems, Protocols, Programming: C/C++, Python, Arduino, AVR Assembly, I2C, SPI, UART, Git