Samuel T. Wang

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EDUCATION

Vanderbilt University **Nashville, Tennessee**

Bachelor of Engineering, Electrical and Computer Engineering; GPA: 3.96/4.00**,** Dean's List (2x) *May 2027*

Relevant Coursework: Digital Systems, Analog Circuits, Electronics, Digital Signal Processing, Microelectronic Systems

PROFESSIONAL EXPERIENCE

Vanderbilt Institute for Space and Defense Electronics Lab *Aug 2023 – Current*

Undergraduate Researcher

- Managed team of three in custom PCB development for 3-nm FinFET CMOS test ICs, incorporating ADC interface via I2C and level-shifter circuits (3.3V/5V), enabling radiation effects research on advanced transistor nodes
- Developed Python scripts to automate data collection and parsing to investigate shift register functionality at low supply voltages, improving manual processing time by 25 minutes

The SyBBURE Searle Research and Design Program *May 2024 – Current*

Undergraduate Research Fellow

- Implemented an audio-responsive system by interfacing an LED matrix with a Raspberry Pi, using EEG brainwave data to generate mood-specific visualizations and music playback
- Enhanced user experience by integrating Spotify API to enable audio playback linked to mood-driven playlists
- Presented research poster at the 2024 SyBBURE summer symposium to a 40+ audience

Vanderbilt Undergraduate School of Engineering *May 2024 – Aug 2024*

Research Intern

- Assessed manufacturing variations at the 3nm bulk-FinFET node by measuring ring oscillator frequencies on 50+ devices at 3 voltage levels, improving production reliability
- Developed measurement techniques enabling accurate reading of shift register data at sub-450 mV input voltages, enhancing functionality for low-power applications

Rutherford Appleton Laboratory *Aug 2020 – Aug 2023*

Lead Author & Researcher *Oxfordshire, England*

- Collaborated with industry and academic experts to systematize real-time telemetry data collection over WiFi, using Python and Wireshark, enabling precise measurements that enhanced operational stability
- Evaluated 12 key parameters to identify root causes of single event upsets in drones, using Pandas and Matplotlib for data visualization
- Presented research poster to a 400+ audience at the IEEE Nuclear & Space Radiation Effects Conference

PROJECTS

Ribbon Cable Tester (Team Lead) *Dec 2023 – Jan 2024*

- Coordinated custom PCB development to enhance testing reliability of 40-pin ribbon cable connectors, achieving a 95% reduction in testing time

AM Radio Transmitter PCB *Oct 2024 – Nov 2024*

- Designed a sine wave generator in Altium and fabricated a PCB to generate carrier wave signals in the AM frequency band for a miniature radio transmitter, collaborating with a team of 4 to ensure seamless integration of components
- Simulated circuit performance in LTSpice to validate design accuracy, and documented the entire design and testing process, enabling future revisions and ensuring clear communication across the team

ACTIVITIES

Vanderbilt Nuclear Fusion *Feb 2024 – Current*

- Evaluated electrical systems in IEC nuclear fusion reactor architecture to enhance test and risk mitigation strategies
- Overhauled reactor systems software integration; consolidated documentation ranging 4 different software apps

Vanderbilt Amateur Radio Club *Aug 2024 – Current*

- Assembled a low-cost, directional Yagi antenna for transmitter hunting, optimizing signal accuracy and reducing tracking time for field operations

SKILLS

Programming: Java, C++, Arduino (C++), SystemVerilog, Python, R, MATLAB

Tools: Altium, KiCad, EasyEDA, LTSpice, VSCode, IntelliJ, PyCharm, Jupyter Notebooks