

Yixi Chen (Patrick)

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EDUCATION

Vanderbilt University, Nashville, TN

May 2025

Bachelor of Engineering, Electrical Engineering and Computer Engineering

PROFESSIONAL EXPERIENCE

NASA Student Launch: Vanderbilt Aerospace Design Laboratory, Nashville, TN

August 2024 – Current

Vanderbilt Braun Lab for Advanced Robotics & Control, Nashville, TN

Researcher

May 2024 – Current

- Designed electronics for experiments, including motor drivers, ADC current sensors, and microcontrollers. Developed CAN communication protocol and signal processing code (Microchip dsPic). Used Simulink to design controllers.
- Designed and executed experiments with PID and optimal controllers to demonstrate advantages in disturbance rejection, hip movement simulation, and energy-efficient dynamic equilibrium adjustments.

Research Assistant

January 2024 – May 2024

- Provided electronics support, including Bluetooth and TCP communication for data collection.
- Investigated Brushless Motor Driver Board functionality, developed a custom plug-and-play C++ OOP library for PhD students, and created a comprehensive setup and usage guide for brushless motors.

Vanderbilt Robotics and Autonomous Systems Laboratory, Nashville, TN

February 2023 – December 2023

Research Assistant

- Spearheaded the design, assembly, and testing of Surface Mount Technology (SMT) PCB for a specialized remote controller named "Wand," pivotal to various ongoing research projects.
- Prototyped innovative systems leveraging thin-film analog pressure sensors to analyze patients' stress levels.

ACADEMIC PROJECTS

Autonomous Object Avoidance & Echolocation Smart Car

January 2024 - May 2024

- Responsible for developing autonomous object avoidance, multithreading between functionalities, and networking among vehicles to enforce the game rule.

Software-defined Radio Front End RF Amplifier

March 2024 - May 2024

- Designed, simulated, and tested a custom multistage broadband feedback amplifier with extremely good performance that has a 120dB transresistance gain, and passband between less than 500KHz to above 50MHz.
- Submitted a comprehensive industry-standard engineering report.

FPGA: Connect-Four

March 2024 - May 2024

PCB Layout STM32 Microcontroller Development Board

November 2023 - December 2023

Technical Skills

Programming: C, C++, Python, MATLAB, Latex

Software: Keil uVision5, C-lion, Mathematica, Simulink & Stateflow, Altium Designer, Quartus, Questa, LTSpice, VS Code, Adobe Premiere Pro & After Effect & Illustrator, Cadence Virtuoso

Skills: Analog/Digital Circuits Design & Analysis, Control System, Embedded Computing (STM32, ESP32, Arduino, Teensy, MCS-51, Raspberry Pi), FPGA, OOP, Algorithms, OS, PCB Layout, VLSI