SADIE PULLEN

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EDUCATION

Vanderbilt University – *Bachelor of Engineering in Electrical and Computer Engineering* **Nashville, TN**
Minors: Computer Science and Physics *Expected May 2026*

- Cumulative GPA: 3.95
- Relevant Coursework: Spacecraft Systems, Embedded Systems, Microcontrollers, Electronics, Digital Signal Processing, Intermediate Software Design, Electromagnetics, Electrical Energy Systems, Microelectronic Systems

Northwest Rankin High School **Flowood, MS**
High School Diploma *Aug 2018–May 2022*

- Honors: Co-Valedictorian, National Merit Finalist, Emmy Noether Scholar, Presidential Service Award

PROFESSIONAL EXPERIENCE

Nissan North America, Inc **Franklin, TN**
Supplier Quality Development Intern *May 2024–Aug 2024*

- Developed and automated a specialized audit software tool, improving efficiency and saving 80 working days per year
- Researched and evaluated >20 supplier quality audit software systems and collaborated with auditors to gather input
- Designed a proof of concept for digitalization, creating detailed flow diagrams and documentation for recommendation

Vanderbilt Electrical and Computer Engineering Technology Lab **Nashville, TN**
Vanderbilt ECE Tech Crew Member & Team Lead *Feb 2024–present*

- Selected as an inaugural tech crew member to improve maker culture and expand hands-on access to ECE lab resources
- Serve as weekly lab proctor, assisting peers with soldering, prototyping, and debugging using Keysight equipment
- Trained in operation of LPKF PCB milling machine to support rapid prototyping and circuit fabrication
- Secured independent lab access for personal projects, demonstrating initiative in technical skill development

Vanderbilt Tutoring Center **Nashville, TN**
STEM Tutor *Aug 2023–May 2024*

- Tutored >50 Vanderbilt students in calculus, physics, and chemistry, offering personalized peer assistance
- Collaborated with the Tutoring Center to enhance educational resources for underrepresented groups at Vanderbilt
- Completed professional development training, gaining knowledge in teaching theories and enacting university reforms

PROJECTS

Wireless Personal Area Network Receiver Amplifier – *Multi-Stage Feedback BJT Amplifier, LTSpice* **May 2025**

- Designed a multi-stage BJT feedback amplifier satisfying PAN gain, bandwidth, impedance, cost, and power constraints
- Simulated design in LTSpice to validate gain tolerance, impedance matching, and robustness to ±50% Beta variation
- Refined cascode and biasing scheme using feedback, hand calculations, and staged design to ensure stable performance

Maze-Solving Autonomous Robot – *ATmega328P, IR Sensors, Embedded C* **Nov 2024**

- Designed and implemented an autonomous line-following robot using a microcontroller and real-time sensor feedback
- Developed custom PWM motor control and LED diagnostic system for reactive navigation
- Created maze-solving algorithm with memory-based decision logic for efficient pathfinding

Voice Recognition Digital Signal Processing Project – *MATLAB, Audio Classification* **Apr 2024**

- Processed and normalized over 120 sample audio files using custom algorithms to extract unique speaker characteristics
- Designed feature extraction and comparison algorithm to identify speakers with high accuracy across all samples

Automated Medical Syringe Pump – *Arduino Uno, Embedded Control, Fusion360* **Apr 2023**

- Developed a microcontroller-based syringe pump with ±1 mL/min flow accuracy using closed-loop control
- Implemented embedded C++ firmware on Arduino for flow regulation, safety protocols, and system calibration
- Designed and fabricated custom actuator housing in Fusion 360, optimizing for durability and mechanical alignment

Salinity Detector Probe – *Arduino, Custom Sensors* **Apr 2022**

- Designed and built a custom conductivity probe to measure NaCl concentration (ppm) in water with high accuracy
- Achieved reliable performance across varying salinity levels; recognized at state and national science competitions

LEADERSHIP & INVOLVEMENT

Vanderbilt Aerospace Design Lab **Nashville, TN**
Head of Payload Control Systems *Jun 2025 – present*

- Led design and integration of all payload control systems to meet NASA mission safety and performance requirements
- Managed development of flight-sequence logic and sensor operations to ensure reliable autonomous payload performance
- Collaborated with a cross-disciplinary team to integrate electronics and mechatronics for safe, reliable payload operation

IEEE Vanderbilt Student Chapter **Nashville, TN**
Event Planner *Jun 2019 – Aug 2022*

- Coordinate all chapter events, maintain budgets, and ensure cost-effective supplies and logistics
- Assist faculty advisor in planning events to promote the practice of electrical engineering and IEEE events to students
- Communicate with guest speakers, vendors, and campus departments to deliver engaging programming for >90 students

SKILLS AND INTERESTS

Skills: C, C++, Java, Python, VBA, MATLAB, Assembly, PCB Design, VHDL, Quartus, Git, Autodesk Fusion, LTSpice, KiCad, Soldering
Interests: Tennis, Pickleball, Classic Literature, Culinary Arts, Running, Hiking, Trivia, Cultural Travel, Engineering History