Colin Strout

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EDUCATION

Vanderbilt University **Nashville, TN**

Bachelor of Engineering in Electrical and Computer Engineering and Mathematics, Minor in Computer Science *May 2027*

- **Relevant Coursework:** *Data Structures, Algorithms, Intermediate Software Design*
- **GPA:** *3.97, Dean's List (all semesters)*

EXPERIENCE

Oracle **Naples, FL**

Software Engineer Intern *May 2025 – Aug 2025*

- Designed and implemented a context retrieval web service leveraging Oracle 23ai Vector Database, improving LLM-generated text relevance to user domains and reducing memory consumption by 20%
- Developed and managed an internal AI ideation platform built on Oracle Cloud Infrastructure with JavaScript, enabling cross-business unit collaboration and rapid prototyping through RAG-based chatbot assistants and similarity search with 95% accuracy
- Migrated a web service's local database image testing rig from Oracle 19c to Oracle 23ai, including automation of build scripts using Bash and Docker, increasing local testing efficiency by 40%

Vanderbilt University **Nashville, TN**

Undergraduate Research Assistant *Jan 2025 – Oct 2025*

- Developed a driver for the Bioimpedance channel of MAX3001 sensor and integrated the driver with the sensor's ECG channel to allow for simultaneous Electrocardiogram and Respiratory reading functionality within a wearable sensor using Rust
- Synthesized a driver and binary file for a blood flow sensor that uses an LED and photodiode transmitter and receiver system that uses the MAX86141 sensor and nrf52840 MCU using Rust

PROJECTS

Vanderbilt Aerospace Design Laboratory (VADL) | *C, C++, Python, Low-Level Development* *Aug 2025 – Present*

- Designed and implemented firmware architecture for a soil sensor system on an ARM Cortex-M4 MCU, using Modbus protocol over RS-485 using UART
- Enhanced rocket simulation software in C++ by modeling induced drag from a custom apogee control system, improving apogee prediction accuracy to 95%
- Optimized apogee control system firmware to reliably detect rocket launch/landing and safely log pre-launch and in-flight data to SD card with multi-threading and effective memory management on a single board computer

Autonomous Lunar Robot | *C, C++, OpenCV, ROS 2* *Aug 2024 – Present*

- Developed SLAM algorithms to optimize image processing using an Intel RealSense peripheral, including distance calculation and object detection using C++
- Calibrated and implemented a microcontroller in C to control the wheels of the robot and optimize its movement
- Leveraged ROS 2 to assist in the design of a Publisher-Subscriber communication protocol to ensure consistency in the robot's actions, both in autonomous and manual settings

NASA SUITS Challenge | *C#, JavaScript, Docker* *Oct 2023 – May 2024*

- Developed a non-intrusive Augmented Reality User Interface that assists and enhances a user's experience when completing a simulated EVA mission on Mars using C# and .NET through Unity
- Created a custom REST API between a local mission control center and Microsoft HoloLens 2 to increase data streamlining efficiency of JSON data by 20% using JavaScript
- Spearheaded front-end development of a particular feature within the local mission control center using Agile methodologies and communicative strategies with partner university

SKILLS

Programming Languages: C/C++, C#, Python, Java, HTML/CSS, TypeScript/JavaScript, SQL, Bash, Rust
Frameworks/Databases: PyTorch, TensorFlow, NumPy, Next.js, React.js, Node.js, Spring Boot, MongoDB
Technologies: Git, GitHub, Docker, Kubernetes, OpenCV, Linux**,** ROS 2, Jenkins, TCP/IP, UDP