Samuel Witte

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Education

University of Iowa – BSE in Electrical Engineering with Minor in Mathematics   Dec 2024

Experience

Avionics Intern, ispace Technologies, US – Denver, CO   Jun 2024 – Aug 2024

- Utilizing Altium Designer, designed ground support hardware for Apex 1.0 lander and M3 (and onward) basing design decisions on both existing and new requirements
- Completed PCB layout work on 10-layer network interface circuit card assembly containing over 400 components and includes technologies such as PCIe and M.2
- Contributed to NASA's CLPS initiative through support equipment design and testing
- Created block diagrams, wrote comprehensive tests and internal and external documentation, and submitted purchase requests for components
- Participated in design reviews and provided feedback to improve project outcomes
- Collaborated effectively with multiple teams of engineers on several projects

Undergraduate Computer Engineer, University of Iowa – Iowa City, IA   Feb 2023 – May 2024

- Collaborated with NASA and University research groups on projects such as MAGIC and TRACERS
- Utilized MATLAB and Raspberry Pi to display ADC outputs sent via SPI
- Designed a ground support computer utilizing the CCSDS protocol and LVDS for data downlink from sounding rockets and connected data collection systems
- Prototyped deployable portable magnetic field alert system intended to test instruments prior to entering sensitive labs and work environments
- Wrote basic Verilog modules and testbenches for various projects

Teaching Assistant, University of Iowa – Iowa City, IA   Aug 2023 - Dec 2024

- Led and prepared lab sessions, proctored exams, graded homework, and held office hours
- Helped students ensure topic mastery by individually working on relevant questions
- TA'd Linear Systems I, Communication Systems, Introduction to Digital Design, and Electronic Circuits

Electrical Design Intern, SSC Engineering, Inc. – Chesterfield, MO   Dec 2021 – Aug 2022

- Saved 40+ hours monthly by building internally used automation scripts written in Python and PS
- Deployed scripts across systems company-wide using external script deployment software
- Designed electrical layouts for commercial and healthcare facilities using Revit and AutoCAD to satisfy constantly changing client specifications and requirements

Projects

High-Powered Rocketry Flight Computer   samwitte.com/projects/flightcomputer.html
- Recorded barometric pressure, temperature, acceleration, and angular velocity data in-flight for analysis post-flight using an RP2040 micro-controller
- Developed electrical schematic, completed PCB board layout, handled bill of materials, and hand soldered and assembled custom flight computer circuit boards
- Improved and iterated on design with new members to improve performance and expand feature set
- Assisted and guided club members to develop a new revision including live data transmission and receipt via 900 MHz radio modules and a ground support dashboard for real-time telemetry

ESP32 Powered IoT Thermometer   samwitte.com/projects/esp32.html
- Developed an innovative temperature-sensing IoT solution using the ESP32 microcontroller, integrating Wi-Fi and Bluetooth for seamless wireless connectivity
- Programmed robust, real-time firmware with the ESP-IDF framework, enabling efficient sensor data acquisition, system control, and idle-state power management for maximum battery life
- Designed, simulated, and iteratively manufactured module case using FEA and FDM 3D printing

CircuitFish - Circuit Reference Dictionary   https://circuit.fish/
- Launched an interactive online reference dictionary that demystifies complex circuit concepts through definitions and interactive visual aids, serving as a one-stop resource for both professionals and students
- Partnered with engineering and design teams to curate and validate technical content, ensuring the platform's reliability as a trusted resource for both professionals and students
- Engineered custom ChatGPT and Deepseek-R1 instructions and data pipelines to optimize natural language responses for domain-specific queries, enhancing user engagement and accuracy

Personal Portfolio Website   samwitte.com
More of my earlier and smaller projects can be found here with write ups, photos, and more.

Skills

Languages: Python, C++, C, AVR Assembly, Java, Verilog, Powershell, TypeScript, JS, HTML
Tools and Technologies: Altium, KiCAD, Thonny, Fusion 360, Git, VCS, TensorFlow, MS Office, Jira, Confluence, Revit, AutoCAD, Soldering, I2C, SPI, FPGA, UART, MQTT, Generative AI (including both local and cloud-based large language models, stable diffusion models, and other models)