Philip I. Kuhle

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Objective

Driven, adaptable, and reliable electrical engineer with a strong embedded systems foundation and PCB design and layout experience seeking a full-time position starting in Summer, 2025. Experience in a fast-paced startup environment and the defense industry. Particular interest RF engineering and embedded hardware development with applications in robotics and aerospace.

Education

Georgia Institute of Technology | Atlanta, GA

M.S. in Electrical and Computer Engineering, GPA: 4.0 *August 2024 – May 2025*

B.S. in Electrical Engineering, GPA: 3.85 *August 2020 – May 2024*

Skills

Programming: C, C++, Python

Hardware: STM32 microcontroller (MCU), ARM mbed MCU, oscilloscope, waveform generator, logic analyzer, multimeter, soldering, digital circuits, analog circuits

Software: Altium Designer, STM32CubeMX, STM32CubeIDE, STM32CubeProg, MATLAB, LTspice, Linux developer environment, Git, ANSYS HFSS, Microsoft Office, Jira, Confluence, Atlas

Communication: Project management, technical writing and reports, presentations, technical documentation

Experience

Gecko Robotics | Pittsburgh, PA *May 2024 – August 2024*

Electrical Engineer Intern

- Identified requirements for, planned, and designed a wireless E-stop system to cut power to wall-climbing robots
- Brought up two custom PCBs using STM32F3 MCUs and Digi Xbee radio modules to wirelessly communicate
- Estimated and optimized PCB power consumption to appropriately size wireless controller batteries
- Devised custom communication protocol, including a custom watchdog algorithm, to verify connectivity between PCBs

Gecko Robotics | Pittsburgh, PA *May 2023 – August 2023*

Electrical, Firmware, and Integration Engineer Intern

- Designed a system to detect when a wall-climbing robot loses magnetic adhesion to industrial assets
- Used Altium to design a PCB interfacing three Hall-effect sensors and an STM32F3 MCU
- Wrote firmware in C to poll sensors using I2C and to send data over USB to the robot's onboard computer
- Effectively collaborated with mechanical engineers to ensure proper integration of all components
- Adhesion detection feature rolled out to Gecko's entire robotic fleet because of its impact inspection safety

Georgia Tech Experimental Rocketry | Atlanta, GA *January 2023 – Present*

Avionics Engineer

- Bringing up multiple PCBs for a custom flight computer stack for a two-stage solid fuel rocket
- Designed six-layer PCB with an STM32H7 MCU, sensors, GPS, and many communication buses to perform attitude determination
- Wrote packet decoder in Python to read and display live telemetry received in-flight from rocket's onboard radio
- Provide project planning feedback, technical consultation (schematic and layout review), and mentorship to younger members

Electromyography (EMG) Controlled Wheelchair – Senior Capstone | Atlanta, GA *September 2023 – April 2024*

Electrical Hardware Lead

- With a $1,000 budget, electrified a manual wheelchair whose motors were commanded by muscle signals
- Led system-level electrical integration by creating wiring diagrams
- Designed PCB to filter and add DC bias to raw EMG signals detected from muscles and to pass those signals to an ADC
- Awarded $1,500 prize for best interdisciplinary capstone project

Georgia Tech Research Institute | Atlanta, GA *May 2021 – July 2021*

Optical Engineer Intern

- Engineered an optical system to perform homodyne scanning holography, a form of digital holography
- Led construction of an interferometer to generate a Fresnel zone plate (FZP) interference pattern with adjustable frequency to be scanned over an object
- Controlled a motorized two-axis mirror using MATLAB to automatically adjust scanning region size, collect and organize photodetector data, and digitally reconstruct the object point-by-point
- Results used to test if homodyne scanning holography could be used in a concept LiDAR system