Kyle Ahlschlager
Electronic Hardware Engineer
MEng (Robotics, Cum Laude), BEng (Robotics)

kyleahlschlager@outlook.com linkedin.com/in/KyleAhlschlager kyleahlschlager.github.io

Professional Summary

Electronic Hardware Engineer with experience in high-current power electronics, multi-layer PCB design, embedded firmware development, and MIL-STD compliant systems. Proven background in designing and validating 28VDC power delivery platforms, high-speed communication interfaces, and board-level test infrastructure. Published researcher in autonomous robotics with strong analytical and cross-disciplinary engineering capability. Experience being a design team lead as well as leading the testing and integration processes for function critical systems.

Education

MEng, Master of Engineering in Electronic Engineering **2022 - 2025**
Stellenbosch University *Western Cape, RSA*

- **Research Topic:** Developing an autonomous robotic platform capable of navigation over unknown, rough terrain. A platform-fusion approach was used to ensure successful adaptability of the system. This research has resulted in two publications.
- **1st Publication:** "Using a multi-robot system for improved path planning", 2023 RAPDASA-RobMech-PRASA-AMI Conference. Presented under the topic of "Robotics and Mechatronics".
- **2nd Publication:** "Tethered Multi-Robot System for Improved Path Planning and Exploration", 2023 ICAR - *International Conference on Advanced Robotics*. IEEE accredited. Presented at conference during panel discussion, "Multi-Robot Systems".

BEng, Bachelor of Engineering in Electrical and Electronic Engineering **2018 - 2021**
Stellenbosch University *Western Cape, RSA*

- **Specialisation:** Robotics.
- **Final Year Research Topic:** Using trajectory optimisation to control a walking biped. This involved the design and construction of the biped, the setup of a simulation environment to develop movement trajectories and the subsequent testing of these trajectories on the physical platform.

Technical Skills

Electronics and Simulation: Altium, KiCad, LTSpice, MATLAB, Simulink
Embedded Systems: STM32, Atmel, ARM, C/C++, Python
Mechanical and CAD: Autodesk (Inventor, Fusion 360), SolidWorks, OnShape, CNC machining, sheet metal fabrication
Fabrication and Testing: PCB design, hardware bring-up, instrumentation, functional testing, 3D printing (FDM, SLA), laser cutting, plasma cutting,
Languages: English - native, Afrikaans - good, German - beginner, Dutch - beginner
Other: Linux, Git, LaTeX, MS Office, Teamcenter

Experience

Electronic Hardware Engineer - *Milkor Integrated Systems* *March 2025 – Present*
Junior Electronic Hardware Engineer - *Milkor Integrated Systems* *September 2024 – February 2025*

- PCB design in Altium Designer, with extensive simulations of circuits in LTSpice.
- Design of rigid and rigid-flex PCBs, up to 10 layers. Experience with multiboard designs in Altium.
- Designed high current PCB's used in power delivery systems, currents up to 150A at 28VDC.
- High frequency PCB design, with special focus on communication protocols such as I2C, 1-Wire, UART and RS485.
- Design of testing platforms for board-level testing and fully-functional unit testing.
- Functional programming in Embedded-C for testing of hardware designs, programming done mostly on Atmel micro-controllers.
- Enclosure design in Fusion 360 for housing PCBs and testing equipment, designs done for both sheet-metal manufacturing and CNC milling.
- Hand soldering and rework of SMD components for PCB prototyping and modification, familiar with IPC workmanship and ECSS standards.
- Designed and tested 28VDC power delivery systems compliant with MIL-STD-704F standards.

- Wrote test procedures designed to meet system specification and developed testing systems to automate the testing procedures.
- Compiled documentation according to company policies and industry standards.

Freelance Electronics Consultant *2018 - Present*

- Aided in interfacing an Arduino based PLC, as a 4th axis, into an existing 3-axis robot arm for a 4th year Mechatronics design project.
- Designed and installed a suitable control system, with accompanying motor and sensor for a particle separator. As part of a Mechanical Engineering thesis.
- Designed a control and logging system for a chemical waste treatment system. This was required to take pH readings from 3 separate sensors and utilising a PID controller adjust the amount of concentrate added to the system via a dosing pump. Additionally, the system was equipped with an optical sensor to measure CO2 production, this data along with the dosing and pH readings was stored locally on a SD card and uploaded to an online dashboard for monitoring. This was part of a Masters of Engineering in Chemical Engineering thesis which achieved a cum laude in 2023.
- Provided input on the kinematic modelling, motor and driver selection, and controller design for a high-load, linear actuator driven quadrupedal robot.
- Designed a self-contained, battery powered alarm system for township shops. This system included both a siren and strobing LEDs for disorientation purposes, along with the control and charging circuitry.
- Designed a brass cartridge annealing system using an induction heated coil.
- Developed a livestock scale capable of both displaying and storing the measured "live-weight" of an animal.

Agricultural Machinery Diagnostician *2015 - Present*

- Diagnosed a faulty PTO control switch on a McCormick tractor. Subsequently, reverse-engineered and reproduced an improved version.
- Repaired a damaged wire harness on a Massey Ferguson 7600 series after it sustained burn damage.
- Various mechanical repairs to implements such as offset discs and rippers, including but not limited to replacing bearings and welding broken mounts.

Learning Assistant - *Stellenbosch University* *2022 - 2023*

- **Modules:** Electronics 315, Computer Systems 245, Control Systems 314
- Assisting students during tutorial and practical sessions with coursework and operating laboratory and experimental equipment.
- Assisting in the marking of formative assessments and practical reports.

References

Available upon request.