KYLE FLANEGAN

MECHATRONICS ENGINEER

CONTACT

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LinkedIn Profile

Portfolio Website & Video

GitHub Profile

St Francis Links, South Africa

EDUCATION

2019 - 2025
BACHELOR OF ENGINEERING IN MECHATRONICS
Nelson Mandela University
- 68% Pass Average

2014 - 2018
NATIONAL SENIOR CERTIFICATE
Grey High School
- 76% Pass Average

SKILLS

- PLC Programming
- HMI Integration
- SolidWorks
- Inventor
- Fusion 360
- C/C++
- Python
- LoRaWAN
- MQTT
- Figma
- HTML, CSS, JavaScript
- Microsoft Office Products

PROFILE

I am a versatile engineering professional combining technical expertise across multiple disciplines with a proactive problem-solving mindset. My foundation in mechatronics equips me with skills in mechanical design, electrical systems, programming, and software development. I excel in fast-paced environments where analytical thinking and creative approaches deliver innovative solutions. With proven academic excellence and hands-on project experience, I maintain a collaborative work ethic and clear communication of complex concepts. I am passionate about applying my interdisciplinary skills to create efficient, user-centered solutions in any engineering domain.

WORK EXPERIENCE

R&D Engineering Consultant & Founder — **MAR 2025 - PRESENT**
Zentrilox (PTY) LTD - Trading as MechaNova

- Offering CAD design services, 3D modeling, and IoT solutions
- Creating technical documentation and project proposals
- Specializing in SolidWorks design and remote monitoring systems

Featured Projects

IoT Water Tank Monitoring System - Research & Proposal | Apr 2025

- Researched and designed comprehensive proposal for remote water monitoring solution
- LoRa wireless technology for reliable long-range communication
- Detailed component selection and cost analysis documentation
- Developed conceptual web interface design for remote monitoring and control

Technical Skills

- CAD Software: SolidWorks, AutoCAD
- IoT Technologies: Arduino, ESP32, LoRa communication, WebSockets
- Fabrication Knowledge: 3D printing, technical drawing standards
- Electronics: Sensor integration, remote monitoring, solar power systems

Control Systems Engineer Internship — **JUN 2023 - JUL 2023**
Jendamark Automation, Port Elizabeth

- Programmed Fanuc robots utilizing Siemens and Allen-Bradley PLC systems, demonstrating foundational PLC programming expertise.
- Developed interlock systems and HMI layouts for a material transfer station using TIA Portal, reflecting proficiency with HMI platforms.
- Collaborated with cross-functional teams to design and implement effective control system solutions.

R&D Electrical Engineer Internship — **JUN 2022 - JUL 2022**
Microcare, Port Elizabeth

- Developed MQTT system for remote communication with geyser controllers.
- Installed and configured load boxes for product testing.
- Implemented IoT networks for improved product monitoring and control.
- Gained hands-on experience with solar electrical components and systems.

LANGUAGES

English

Afrikaans

HOBBIES

Playing Golf

Playing Padel

Building DIY Projects

Embedded Projects

ACHEIVEMENTS

- **Full Colours** for Academics in Matric
- **Distinction** (80%) for Mechatronics Final Project
- **Represented Eastern Province** for Triathlon, Duathlon and Waterpolo

PERSONAL

- Born 3rd January 2000
- Drivers License

RECENT PROJECTS

IoT Remote Water Monitoring System

MAR 2025- PRESENT

Proposed solution for a remote water tank monitoring and pump control system for a farm, implementing wireless communication using LoRa.

- Researching and specifying LoRa wireless technology to enable reliable long-range communication between water tank and pump control systems.
- Designing a dual-microcontroller architecture utilizing ESP32 and Arduino platforms for optimal efficiency.
- Developing a responsive web interface for real-time water level monitoring and control of borehole pump using Solid-State Relays.
- Creating specifications for solar power implementation with battery backup for the remote sensor station.
- Planning integration of industrial automation components including SSR's and breakers for circuit protection.
- Designing for weatherproof operation in variable climate conditions

Technologies:

- Arduino, ESP32, LoRa communication, WebSockets, Solar power systems, Ultrasonic sensors, Remote monitoring, IoT architecture

Multi-Functional Adjustable Desk

JAN - NOV 2024

R&D of a multi-functional adjustable work desk that combined mechanical, electrical, and IT systems into a user-friendly ergonomic solution.

This desk was engineered to adapt to three modes:

1. Sitting mode (minimum desk height)
2. Standing mode (raise desk)
3. Screen mode (tabletop tilt from 0° to 90°).

Skills Used & Enhanced:

- CAD modeling and FEA simulations (SolidWorks).
- Circuit design and motor control programming (Arduino C++).
- Synchronization of actuators with PWM control.
- Prototyping: Assembling motors, sensors, and control systems.
- Safety feature integration: Limit switches, alarms, and emergency stop.
- Testing: Electrical and mechanical testing of components and final design.

Outcomes:

Delivered a reliable prototype validated through load tests, synchronization precision tests, and safety mechanism checks, demonstrating the ability to merge engineering disciplines effectively.

COURSES

Complete Web Developer

PRESENT

Udemy Complete Web Developer course with HTML, CSS, Javascript, React, Node.js, Machine Learning & more.

React Foundations for Next.js

MAR - APRIL 2025

Vercel course on the foundational concepts to help go from JavaScript to React.