# Surafel Wondmagegn Techan

Surafelwendnagegn457@gmail.com 📞 0939100952 👂 Addis Ababa , Ethiopia

in linkedin.com/in/surafel-wondmagegn-23a88026a 🐧 github.com/Surafelwd

## PROFESSIONAL EXPERIENCE

# PCB Designer and Embedded system Engineer

DAFTech Social ICT Solutions PLC ∅

I design custom circuit boards and develop embedded firmware for innovative hardware solutions, ensuring efficient integration of electronics and software for real-world applications.

05/2025 - Present Ethiopia, Addis Ababa

## **Embedded System Engineer**

4K LABS &

11/2023 – present Addis Ababa, Ethiopia

Took charge of the full development lifecycle for innovative projects, such as:

- Air Freshener System powered by the ATtiny85 microcontroller.
- Autonomous Car & utilizing Raspberry Pi for self-driving capabilities.
- Buzzer Game for interactive and engaging gameplay
- Provided mentorship for new team members,

# **Teaching Assistant**

4K LABS &

07/2024 - 09/2024 Addis Ababa, Ethiopia

- Assisted in teaching Data Analysis Fundamentals
- Assisted in teaching Arduino Mastery courses.

# **EDUCATION**

# BSc in Electrical and Computer Engineering

Addis Ababa University

04/2022 - 06/2026Addis Ababa, Ethiopia

• Relevant Courses: Object Oriented Programming, Digital Logic Design, Computer Organization and Architecture, Digital signal Processing, Principles of Electronics Design

## **Electronics and Embedded Systems**

4k LABS ∂

08/2023 - 11/2023 Addis Ababa, Ethiopia

• Secured an internship at 4K Labs

## **SKILLS**

## **Embedded Systems**

Using ATtiny, Raspberry Pi, Arduino, ESP32, STM32, STM32CubeIDE

#### **Robotics**

Autonomous Navigation, Path Planning

## **SensorS Integration**

e.g., temperature, motion, distance, IR, ultrasonic

# Teaching & Mentoring

Course Assistance, Student Mentorship, Lab Support

# Schematic and Layout design

**Simulation Design** Using Altium, KiCad and Proteus

## System Optimization

Energy-efficient Design

## PCB and PCBA Design

Using Altium, KiCad and Proteus

# PROGRAMMING LANGUAGE

• C++ Python • Java • C

• Assembly Language

• VHDL

# **PROJECTS**

6kiloCafe ∂

• Built a Cafe Management App to streamline operations for campus cafeteria staff, improving student attendance tracking, food announcements, and feedback management, which reduced manual errors and enhanced overall efficiency for both staff and students.

12/2023 - 01/2024

- Utilized Java, C++, MySQL, and Arduino to create a reliable system for managing operations optimally.
- Integrated RFID card technology for seamless student check-ins and ESP microcontroller for efficient data processing and automation.

# Air Freshener System ∅

01/2024 - 06/2024

- Led the development of an air freshener system using an ATtiny85, PIR sensor, and atomizer to improve indoor air quality.
- Engineered a motion-activated dispensing mechanism that triggers fragrance release and then deactivates for one hour before resuming sensing.
- Analyzed power and current consumption to optimize system efficiency.
- Addressed issues like sensor noise and false triggers to ensure stable and reliable operation.

#### Autonomous Car with Ultrasonic Sensor and Lane Detection @

09/2024 - 02/2025

- Designed and implemented an autonomous car using Raspberry Pi, achieving self-driving capabilities in varied test scenarios.
- Integrated ultrasonic sensors and cameras for real-time obstacle detection and navigation.
- Developed robust algorithms for path planning and sensor fusion, enabling precise navigation in dynamic environments.
- Optimized sensor calibration and data processing for enhanced performance.

# Coffee and Tea Automation Machine Development

11/2024 - present

- Conducted research on automating coffee and tea preparation with a multidisciplinary team.
- Designed the embedded system architecture, integrating sensors, actuators, and control mechanisms.
- Collaborated with software and mechanical teams on hardware-software integration.

# **CERTIFICATES**

Data analysis fundamentals 🔗

Certificate of Recognition for Excellence in Assistant Teaching, 4k Labs, 2024

- Data Analysis Fundamentals ∂
- Arduino Mastery &