TWODROS YIRGA

Junior Software Engineer

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Summary

Results-driven Full-Stack Developer with a strong foundation in web and mobile development. Recent Computer Science graduate with top honors (1st in Gafat Institute of Technology) from Debre Tabor University. Skilled in React.js, Next.js, Flutter, and backend development, with hands-on experience in MERN stack, Java, C++, and system optimization. Developed a Drone Delivery Service system as a final-year project, integrating both hardware and software solutions. Passionate about building scalable, efficient applications and eager to contribute innovative solutions in a collaborative environment.

Experience

AIPDC(Amhara Industry Parks Development Corporation)

Bahir Dar, Ethiopia

Intern

07/2024 - 09/2024

Amhara Industry Parks Development Corporation (AIPDC) is a government organization managing industrial parks to drive investment and economic growth in the Amhara region. It leverages technology to enhance operations and support industrial development.

- Helped troubleshoot and fix **10+ software issues**, enhancing system reliability.
- Collaborated with a team to improve **data management processes**, streamlining operations for **multiple departments**.
- **Documented and streamlined** technical processes, improving onboarding for future interns.

Debre Tabor University IoT center

Debre Tabor, Ethiopia

IoT Developer

01/2024 - 02/2025

The IoT Team at Debre Tabor University focuses on exploring and developing **innovative IoT solutions** for real-world applications. The team works on **embedded systems, sensor networks, and smart technology** to enhance automation and connectivity in various domains.

- **Designed and developed a fully functional drone** capable of autonomous flight and item delivery, enhancing real-world IoT applications.
- **Built and contributed to multiple IoT projects**, integrating **sensor networks, automation, and embedded systems** for smart solutions.
- **Collaborated with a team of 8 members** to develop and implement IoT-based innovations.

Education

Debre Tabor University – Gafat Institute of Technology

Bachelor of Science in Computer Science

07/2021 - 02/2025

Key Achievements

Graduating with honors

Graduated ranking **1st in Gafat Institute of Technology** at **Debre Tabor University** with a **CGPA of 3.98**, showcasing strong academic performance and dedication

Drone development

Developed a fully functional drone capable of autonomous flight and delivering items, demonstrating expertise in **IoT, embedded systems**, and **hardware-software integration**.

DDS

Led the development of a Drone Delivery System as a final-year project, integrating **MERN stack**, **IoT**, and **real-time data communication**, which provided an innovative solution to delivery logistics.

Skills

Javascript · React.js · Node.js · Express.js · Java · HTML/CSS · TailwindCSS · C++ · MongoDB · MySQL

Git · GitHub · RESTful APIs · Arduino · IoT development · Drone developmen · UI/UX Design

Certification

Top Graduate Certificate – Ranked 1st in Gafat Institute of Technology, Debre Tabor University

Projects

Drone Delivery Service (DDS)

Location

Date period

Developed a full-stack web application for a drone delivery service using the **MERN stack** (MongoDB, Express, React, Node.js) along with **Tailwind CSS** for styling.

- The real-time tracking feature was highly praised for its accuracy.
- The project received positive feedback from the users during the demo, and I was able to showcase a working prototype during my final year presentation.

Dream University Website

Location

Date period

Created a full-stack website for **Dream University** using **HTML**, **CSS**, **JavaScript**, **PHP**, and **XAMPP**. The website includes sections such as course listings, faculty details, student registration, and university news.

- It allowed students to register online, view courses, and check university news.
- The project was well-received during the presentation and demonstrated a robust, user-friendly web interface.

Flight Controller Package

Location

Date period

Developed a **Flight Controller Package** using **Arduino IDE**, designed to control and calibrate drone components. The package includes four key files: a **schematic** for hardware setup, the **flight controller code**, an **ESC calibration code**, and a **setup code** for initializing the drone. The project was inspired by **J. Brokking**, incorporating and adapting his existing code to create a more efficient flight control system.

- The flight controller package was successfully implemented and tested. The system provided accurate control over the drone's motors, ensuring smooth flight operations.
- The project improved the overall functionality of the drone system, and the adaptation of existing code helped enhance its efficiency.

MPU6050 Movement Visualizer

Location

Date period

Built a system using **Arduino IDE** and **Processing** to read the position and acceleration data of an **MPU6050 sensor**. The **Arduino code** reads data from the sensor and sends it via serial communication to the **Processing code**, which visualizes the sensor data in a user-friendly interface. The system displays the motion and orientation of a quadcopter in real-time, offering an interactive 3D visualization.

- The project successfully visualized real-time motion and orientation data from the MPU6050 sensor, allowing for better understanding and control of the quadcopter.
- . The system was reliable and served as an educational tool for visualizing sensor data in an interactive and engaging way.

Functional Drone Development

Location

Date period

Built a fully functional drone using multiple hardware components, including **ESP32** and **Arduino** boards, alongside various sensors like **MPU6050**. Developed the transmitter and receiver systems, utilizing **NRF24L01** modules for communication. The drone was controlled via joystick and potentiometers on the transmitter, while the receiver sent the signals to the **flight controller** to manage the motors. The drone also included **live camera feed** and **GPS functionality** for real-time tracking.

- The drone was successfully assembled and tested, with all systems working harmoniously.
- The real-time control and communication between the transmitter, receiver, and flight controller were seamless.
- The integration of **GPS** allowed for precise location tracking, while the **live camera feed** provided valuable visual data
- What was a successful outcome of your work? (e.g. Raised $3,000 for the charity)