

Ahmed Mohammed Khaer Alzoubi

Phone: +971 50 898 1447 Email: AhmedMKAlzoubi@gmail.com LinkedIn: [ahmed-mohammed-alzoubi](#)
GitHub: [AhmedMKAlzoubi](#) Portfolio: [Portfolio](#)

Summary

Computer Engineering graduate from Ajman University with hands-on experience across **embedded systems**, **full-stack software development**, and **IoT infrastructure**. Proven track record designing CubeSat communication subsystems, developing real-time firmware (ESP32/STM32), building web dashboards, and crafting custom PCBs from schematic to layout. Quick learner who bridges hardware and software to deliver end-to-end solutions.

Education

Bachelor of Science in Computer Engineering

Ajman University

Sep 2021 – May 2026

Ajman, UAE

Work Experience

Embedded Systems Intern

SpacePoint

Jan 2026 – May 2026

UAE

- Designed the full CubeSat communication subsystem schematic in KiCad: STM32H743 MCU, SX1278 LoRa transceiver (433 MHz), RF front-end with PA/LNA, INA219 power monitor, NTC thermistor, USB-C interface, and PC104 bus connector
- Developed C&DH firmware on ESP32 with dual-link telemetry (Serial + Wi-Fi); integrated HC-12 LoRa and MQTT for redundant uplink/downlink paths
- Extended firmware to receive and execute ground-station motor commands for ADCS testing (speed, direction, duration control)
- Built an ESP32-CAM platform to capture and transmit images on command over MQTT/Wi-Fi
- Developed a web-based ground station dashboard (JavaScript, WebSockets, SQLite, Node.js) to visualize live IMU, GPS, and system-health telemetry in real time

Computer Engineering Club Leader

Ajman University

Sep 2024 – May 2025

Ajman, UAE

- Organised and led technical workshops on Arduino programming and embedded systems
- Coordinated the university-wide Arduino Design Project Competition
- Represented the club at the university fair, demonstrating microcontroller kits and hardware

Embedded Systems Projects

CubeSat Communication Subsystem — PCB Schematic

KiCad, STM32H743, SX1278 LoRa, RF PA/LNA, INA219, NTC Thermistor, PC104

- Authored the complete schematic for a CubeSat RF communication board around an STM32H743 MCU and SX1278 LoRa transceiver operating at 433 MHz
- Included an RF front-end with power amplifier/low-noise amplifier stages, an INA219 current/voltage monitor for power telemetry, and an NTC thermistor for thermal sensing
- Added a USB-C interface for programming/debug and a PC104 stack connector for integration with the wider CubeSat bus architecture

Smart Helmet with Real-Time Navigation — Graduation Project

GitHub:

<https://github.com/AhmedMKAlzoubi/Graduation-Project-Public>

ESP32, Transparent OLED HUD, BLE, Google Maps API, React Capacitor, C++

- Built a smart motorcycle/bicycle helmet prototype that overlays turn-by-turn navigation directly onto a transparent OLED heads-up display, keeping the rider's eyes on the road
- Used an ESP32 to receive route data over Bluetooth Low Energy from a companion mobile app and render directional cues on the HUD in real time

- Developed the companion mobile app with React Capacitor, integrating the Google Maps API for route calculation and live location tracking

Digital Business Card — Custom PCB

GitHub: <https://github.com/AhmedMKAlzoubi/Digital-B-Card>

KiCad, ESP32-C3, E-paper display, NFC antenna, FreeCAD

- Designed a custom PCB integrating an ESP32-C3, an E-paper display, and an embedded NFC antenna, allowing contacts to tap and instantly load a digital profile
- Modeled and 3D-printed three matching enclosure variants (Card, Nameplate, Badge) in FreeCAD to suit different use cases and presentation styles
- Took the project end-to-end from schematic capture and PCB layout through to physical enclosure design and assembly

LoRa Two-Node Satellite Telemetry

GitHub: <https://github.com/AhmedMKAlzoubi/LoRa-Boards-Codes>

Heltec LoRa 32, LoRa, MQTT, UART, C++

- Implemented a two-node satellite telemetry link using Heltec LoRa 32 boards, simulating a satellite-to-ground-station communication path
- Programmed the satellite-side node to read sensor data over UART and transmit it wirelessly via LoRa radio
- Built the ground-station node to receive and parse incoming LoRa packets, then forward the decoded telemetry to an MQTT broker for downstream consumption

Desk Companion

GitHub: <https://github.com/AhmedMKAlzoubi/Desk-Companion>

ESP32-C6, Wi-Fi, Google Calendar API, OLED, C++, Arduino

- Created an ESP32-C6-based desktop companion device featuring an animated cat character on an OLED display that reacts to time of day and events
- Connected the device to Wi-Fi to sync a live clock, fetch current weather conditions, and pull upcoming events from Google Calendar
- Implemented all display animation, network handling, and API integration in C++/Arduino firmware running on the ESP32-C6

ESP32-C3 Fume Extractor

GitHub: <https://github.com/AhmedMKAlzoubi/ESP32-C3-Fume-Extractor>

ESP32-C3, MOSFET, PWM, C++

- Designed a soldering-station fume extractor built around an ESP32-C3 Super Mini for variable-speed fan control
- Used a MOSFET driver stage with PWM signals from the microcontroller to smoothly adjust fan speed, with a potentiometer for manual speed input
- Added LED status indicators to give at-a-glance feedback on extractor operating state

Wireless USB Microphone

GitHub: <https://github.com/AhmedMKAlzoubi/ESP32-C3-Wireless-Microphone>

ESP32-C3, INMP441 I2S MEMS mic, SSD1306 OLED, Wi-Fi UDP, C++

- Built a wireless USB-style microphone using an ESP32-C3 Super Mini paired with an INMP441 I2S MEMS microphone for high-quality digital audio capture
- Streamed captured audio in real time from the microcontroller to a PC over Wi-Fi using UDP, minimizing latency for near real-time voice transmission
- Added an SSD1306 OLED display to show live device status and connection information

Temperature-Controlled Fan System

GitHub: <https://github.com/AhmedMKAlzoubi/MY-PROJECTS>

PIC Microcontroller, LM35/DHT11, DC Motor, LCD

- Developed an automated cooling system driven by a PIC microcontroller reading live temperature data from an LM35/DHT11 sensor
- Implemented PWM-based DC motor control to automatically adjust fan speed in proportion to measured temperature
- Displayed real-time temperature and fan status on an LCD for continuous operator feedback

Digital Lock System

VHDL, FPGA, Xilinx ISE

GitHub: <https://github.com/AhmedMKAlzoubi/MY-PROJECTS>

- Designed a secure password-authenticated digital lock implemented entirely in VHDL on an FPGA target
- Modeled the lock logic as a finite state machine handling input entry, validation, and lock/unlock transitions
- Simulated and synthesized the design using Xilinx ISE before verifying behaviour on hardware

Software Engineering Projects

CubeSat Photobooth — Full-Stack IoT Exhibit

GitHub:

<https://github.com/AhmedMKAlzoubi/cubesatphotobooth-updated>

TypeScript, React, Node.js, MQTT, ESP32-CAM

- Built an interactive exhibit where visitors scan a QR code to remotely trigger a live photo capture from an ESP32-CAM mounted inside a CubeSat mock-up
- Used MQTT to relay the capture command from the web frontend to the ESP32-CAM and return the captured image to the backend
- Delivered the resulting photo to the visitor's email within 30 seconds, using a full-stack React frontend and Node.js backend

LoRa Ground Station Dashboard V3

GitHub: <https://github.com/AhmedMKAlzoubi/LoRa-Dashboard-V3>

JavaScript, Node.js, SQLite, WebSockets, MQTT

- Built the third iteration of a web-based ground station dashboard for visualizing live CubeSat telemetry received over LoRa/serial links
- Persisted incoming telemetry to a SQLite database for historical logging and later analysis, while streaming live updates to connected clients via WebSockets
- Enabled bidirectional operation by sending uplink commands from the dashboard to the satellite ground station over MQTT

Unified SpacePoint Platform

GitHub: <https://github.com/AhmedMKAlzoubi/Merged-platforms>

HTML, JavaScript, CSS

- Consolidated three previously separate internal tools into a single unified web platform for the SpacePoint team
- Merged the mission design/management portal with the LoRa telemetry dashboard and interactive onboarding documentation into one cohesive interface
- Reduced duplication and simplified navigation across the team's internal engineering tooling

Portfolio Website

GitHub: <https://github.com/AhmedMKAlzoubi/Website>

HTML, CSS, JavaScript, GitHub Pages

- Designed and built a personal portfolio site styled as an interactive engineering drawing, showcasing hardware and embedded systems projects
- Implemented custom HTML/CSS/JavaScript interactions to mimic technical drawing aesthetics while remaining fully responsive
- Deployed and hosted the site on GitHub Pages for public access

Personal Portfolio — Next.js App

TypeScript, Next.js, React, Vercel

- Developed a single-page engineering portfolio using Next.js and React with TypeScript for type-safe component development
- Integrated an interactive 3D model strip to visually showcase hardware and PCB projects alongside written case studies
- Deployed the application on Vercel for fast global delivery and continuous deployment

DARA Shop — Product Showcase Site

TypeScript, Next.js, React, Vercel

- Built an e-commerce-style product configurator site using Next.js, React, and TypeScript
- Designed a hero landing section paired with an interactive 3D model viewer to let users explore product variants visually
- Deployed the application on Vercel with a focus on fast load times and responsive design

MyVault — Encrypted Password Manager

GitHub: <https://github.com/AhmedMKAlzoubi/myvault>

Python, Encryption

- Developed an offline, encrypted personal password manager in Python, prioritizing local data storage over cloud dependency
- Implemented strong encryption for stored credentials to ensure vault data remains protected even if the underlying file is accessed
- Currently supports Windows, with Android, Linux, and iOS support planned for future releases

Audio Signal Modulation — MATLAB POC

GitHub: <https://github.com/AhmedMKAlzoubi/POC-Project>

MATLAB, Signal Processing

- Built a MATLAB proof-of-concept that records an audio signal as a WAV file for processing
- Applied modulation to the recorded signal and implemented recovery/demodulation to reconstruct the original waveform
- Analyzed the signal's frequency-domain behaviour before and after modulation to verify correct signal processing theory in practice

IT Support

Laptop & Desktop Maintenance (Software & Hardware)

- Performed Windows debloating and system optimization to improve boot time and responsiveness
- Carried out file cleanup, disk space recovery, and startup-program management on client machines
- Cleaned internal cooling fans and heatsinks to resolve thermal throttling and reduce noise
- Repasted CPU and GPU thermal interface material to restore cooling performance on aging systems
- Upgraded RAM and storage (HDD to SSD migration, capacity upgrades) to improve system performance

Operating System Installation & Configuration

- Installed and configured Windows operating systems from clean images on multiple hardware platforms
- Installed Linux distributions and configured drivers, partitions, and user environments
- Configured dual-boot setups (Windows/Linux) including partitioning, bootloader configuration, and UEFI/BIOS settings

Self-Hosted Ubuntu Homelab

Personal Project

- Repurposed an old laptop into a headless Ubuntu Server, managed entirely over SSH, running a persistent Minecraft server via `screen` sessions and a playit.gg tunnel (no port forwarding required)
- Deployed AdGuard Home for network-wide DNS filtering; diagnosed and resolved a systemd-resolved port 53 conflict
- Diagnosed a CGNAT (Carrier-Grade NAT) restriction at the router/ISP level blocking network-wide DNS and remote storage access, and identified static-IP and bridge-mode as the correct remediation paths

Diagnostics, Monitoring & Remote Tools

- Used HWiNFO and Windows Reliability Monitor to diagnose hardware faults, thermal issues, and system crashes

- Used CrystalDiskInfo to monitor drive health (SMART data) and TreeSize to identify and resolve disk space bottlenecks
- Created bootable installation media with Rufus for Windows and Linux OS deployment
- Used WinSCP for secure file transfer between local machines and remote/Linux systems
- Provided remote technical support and file access using AnyDesk and Tailscale
- Proficient with Microsoft Office suite (Word, Excel, PowerPoint, Outlook) for documentation and reporting

Technical Skills

Microcontrollers / MCUs: ESP32, ESP32-C3/C6, STM32H743, PIC, Arduino

RF & Comms Protocols: LoRa (SX1278, HC-12, Heltec), MQTT, Wi-Fi (UDP/TCP), BLE, I2S, UART, SPI, I2C

PCB & Hardware Tools: KiCad, Proteus, Multisim, FreeCAD

Programming Languages: C, C++, Python, TypeScript/JavaScript, VHDL, MATLAB, 8086 Assembly

Web / Full-Stack: React, Next.js, Node.js, WebSockets, SQLite, HTML/CSS

Dev Tools: Git, GitHub, VS Code, Arduino IDE, RoboDK

Platforms / Deployment: Vercel, GitHub Pages

Other: FreeRTOS (CubeSat firmware), Google Maps API, MQTT brokers, Linux server administration (Ubuntu)

Certifications

Design of Digital Circuits with VHDL — L&T EduTech, Dec 2024

Fundamentals of Digital Design for VLSI — L&T EduTech, Feb 2025

Fundamentals of TinyML — Harvard edX

AI Infrastructure and Operations — NVIDIA

Personal Information

- Valid UAE Residence/Work Visa
- Valid Qatar Residency Permit
- Valid UAE Driving License
- Bachelor's Degree attested by: UAE Ministry of Higher Education, UAE Ministry of Foreign Affairs, Qatar Ministry of Foreign Affairs, Syria Ministry of Foreign Affairs and Expatriates, and Syria Directorate of Consular Affairs
- Languages: Arabic (Native), English (Fluent)

Activities & Events

- Computer Engineering Club Leader — Ajman University
- Arduino Design Project Competition Organiser — Ajman University
- Robotics and IT Sustainability Hackathon — Ajman University
- ADIPEC 2024 Energy Convention — Abu Dhabi