MUHAMMET YILDIZ

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SUMMARY

Principal Embedded Systems Engineer with 15+ years designing production hardware and firmware for IoT, industrial, robotics, and medical devices. Full-stack embedded — PCB design (Altium), firmware (C/C++, FreeRTOS), image processing (NVIDIA Jetson), and cloud integration (AWS). Proven technical leader managing cross-functional teams. U.S. work authorized, no sponsorship required.

SKILLS

LanguagesC, C++, Python, C#, SQL **MCU Platforms**STM32 (F4/F7/WL/L0), nRF52, PIC18F, NVIDIA Jetson, Raspberry Pi **RTOS**FreeRTOS, ThreadX (USBX, NetX, GUIX) **Protocols**LoRaWAN, BLE, LTE/Cat-M1/NB-IoT, Modbus RTU, IO-Link, CAN, RS485, MQTT, CoAP **Hardware**Altium Designer (up to 6-layer PCB), SolidWorks, RF layout **Vision & AI**LiDAR, image processing, Apple ARKit, C2PA, TouchGFX **Tools & Cloud**JTAG, SWD, Logic Analyzer, Git, Jira, AWS (Lambda, IoT) **Software**Qt (C++), .NET (C#), Linux application development

EXPERIENCE

Hum Industrial — Austin, TX
Principal Embedded Systems Engineer — Jul 2025 – Present

- Designing custom modem and communication protocol for railcar preventive maintenance sensor network
- Developing LoRaWAN sensor firmware for train health monitoring on STM32WL + FreeRTOS
- Leading PCB redesign of sensor family to improve RF performance and reduce power consumption
- Optimizing LTE modem communication stack for UDP/MQTT telemetry in rail environments

Guinn Partners — Austin, TX
Software Team Lead — Aug 2024 – Jul 2025

- Led cross-functional team delivering embedded, image processing, and mobile/web applications
- Implemented C2PA image signing and verification pipeline on NVIDIA Jetson platforms
- Built real-time image processing systems for LiDAR, drones, and autonomous robots using Linux/C++
- Developed Apple AR application for distance measurement using image processing
- Engineered network bandwidth reduction system for security camera infrastructure
- Led Lift Foils mobile app and web backend development teams

Amplified Industries — Somerville, MA
Senior Embedded Systems Engineer — Oct 2022 – Dec 2023

- Redesigned PCBs in Altium, reducing field device failure rate by 15%
- Refactored firmware codebase, improving battery life by 23%
- Built BLE-to-Cat-M1 camera gateway on nRF52840 (FreeRTOS) for remote oil well monitoring via AWS Lambda

Fenac Encoder — Istanbul, Turkey
Senior Embedded Software Engineering Team Leader — Sep 2021 – Oct 2022

- Designed IO-Link encoder and industrial laser distance sensor PCBs (Altium) with embedded firmware in C
- Built Qt-based (C++) PC tools for device configuration, cutting manufacturing line workload by 28%

Epsilon Elektronik — Istanbul, Turkey
Senior Embedded Systems Engineer — Aug 2020 – Sep 2021

- Developed firmware for Radia Synthesizer (FreeRTOS, C) — controls 20+ stepper motors and radioactivity sensors
- Built companion C# .NET application for device control, prescription tracking, and reporting
- Improved Radiation Area Monitor firmware accuracy, reducing field failures by 12%

Yasam Electronic Water Meter — Istanbul, Turkey
Senior Embedded Systems Engineer — Sep 2016 – Jul 2020

- Implemented LoRaWAN v1.1 library for smart meters and smart city sensor nodes (ARM Cortex-M0+/M4, FreeRTOS)
- Designed and deployed LoRaWAN gateway (SX1301/SX1308) and network server (C, Python, Linux)

Kodar Information Tech — Istanbul, Turkey
Senior Embedded Systems Engineer (Consultant) — Mar 2016 – Sep 2016

- Designed RF PCB and firmware for BLE-based Real-Time Location System (nRF52)

Tum Elektronik — Istanbul, Turkey
Embedded Systems Engineer — Jul 2012 – Oct 2015

- R&D device testing and validation through mass production approval

EDUCATION

Kastamonu University, Turkey — 2009 – 2014

B.S. Mechatronics Engineering

SELECT PROJECTS

Thermal Camera Access Control — Face temperature + mask detection, multi-protocol (BLE/Wi-Fi/CAN/RS485), TouchGFX, FreeRTOS

Mobile Payment Terminal — Custom POS on STM32F7: RFID, GSM, TouchGFX GUI, 6-layer high-speed PCB

Ultra-Low Power Water Meter — LoRaWAN v1.1 volumetric/ultrasonic meter with custom glass LCD, battery-powered

Smart Watch — nRF52 + DA1470x, environmental sensors, TFT LCD (hobby project, open source on GitHub)

Industrial HMI — ThreadX-based (USBX/NetX/GUIX) production line controller

ULP Sensor Nodes — Multi-protocol (Sub-1GHz, LoRaWAN, GSM, Wi-Fi, NB-IoT, BLE) environmental monitoring

LoRaWAN Gateway — Custom gateway (SX1301/SX1308) with Raspberry Pi and STM32F4