Mehmet Dora | Embedded Systems & Software Engineer

CONTACT

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I am a Computer Engineering graduate focused on embedded systems, firmware development, and hardware-software integration. I work with STM32 and ESP32 MCUs, RTOSs, sensor data acquisition, and embedded Linux development. I am currently expanding my experience in cross-compilation, Yocto, and Edge AI through hands-on projects.

PROFESSİONAL EXPERİENCES

Software Engineering Intern | July - September 2025
ePati Siber Güvenlik A.Ş. | Teknopark - Yenişehir/Mersin 🔗

- Developed a web application to detect and visualize conflicts between firewall rules (IPs, ports, protocols) using Node.js and Express.js, involving rule parsing and conflict logic comparable to embedded communication protocol analysis.
- Simulated one year of per-second temperature data from 100 sensors using TimescaleDB; focused on time-series data compression and query optimization — directly applicable to embedded sensor data pipelines.
- Stack: Node.js | Express.js | React.js | PostgreSQL | TimescaleDB | child_process

Software Engineer Intern | July - August 2024
SEYTİM(Seyhan Belediyesi Teknoloji ve İnovasyon Merkezi) | Adana

- Developed a full-stack web application with a teammate using PHP/Laravel, Bootstrap, and jQuery; gained experience in collaborative engineering and structured system design.
- Implemented database management and optimization (MySQL, Eloquent ORM) to improve system performance — experience in data reliability and efficient resource usage relevant to embedded data handling.

EDUCATİON

Çukurova University | 2021 – 2026
Bachelor's Degree in Computer Engineering

SKİLLS

Embedded Systems

- STM32F4xx | ADC-DAC | UART | I2C | SPI |
- STM32MP157F-DK2
- YOCTO | SDK | Embedded Linux
- FreeRTOS
- ESP32s3 Sense | BLE
- PIC16F887 | MPLAPX | Simulide

Tools

- Git / GitHub

Backend - Data

- PHP(Laravel) | PostgreSQL | TimescaleDB

Sensors & Actuators

- HB100 Doppler Radar Module
- MCP6002 OpAmp
- HC-SR04 Ultrasonic | Stepper Motor Control
- MPU6050

Languages

- C/C++ (Embedded) | Python | PHP | Javascript

Core Competencies:

- Problem Solving | Data Analysis | Performance Optimization | Real-Time Systems
- Embedded Systems Design Patterns | State Machine Design

PROJECTS

Radar-Triggered Sidewalk Motorcycle Detection System (Graduation Thesis) 🔗

- Developed a low-cost event-triggered motorcycle detection system designed to reduce the computational cost of continuous urban video analytics. Implemented an STM32F411-based Doppler radar processing pipeline using ADC, DMA, timer-triggered sampling, and FFT analysis to detect motorcycle-like movement from HB100 radar signals.
- Designed an MCP6002-based analog signal conditioning circuit for radar signal amplification and ADC acquisition. Established UART communication between STM32 and ESP32-S3 Sense to trigger image capture upon suspicious motion detection.

- Developed an ESP32-S3 Sense image acquisition system that captures event-based image bursts and transmits them to a server via Wi-Fi. Implemented a Python-based server pipeline for image reception, event logging, dashboard generation, and YOLO11s-based motorcycle validation using a model trained on real motorcycle images.
- Designed and validated a radar-camera fusion architecture that performs low-cost radar pre-detection on edge devices and high-accuracy visual verification on the server side, reducing unnecessary continuous video processing.
- Stack: STM32F411 | ESP32-S3 Sense | C | HB100 Doppler Radar | MCP6002 | ADC | DMA | Timer | FFT | UART | Python | YOLO11s

Embedded Linux Development on STM32MP157F-DK2

- Working with the STM32MP157F-DK2 platform to explore Embedded Linux development and application deployment on ARM-based systems.
- Set up and used the OpenSTLinux SDK to cross-compile C applications for the Cortex-A7 target.
- Built and deployed a Hello World application to the target board over SSH, gaining practical experience with the cross-compilation and deployment workflow.
- Exploring Yocto Project, OpenEmbedded, recipes, layers, and custom Linux image generation.
- Stack: STM32MP157F-DK2 | ARM Cortex-A7 | Embedded Linux | OpenSTLinux SDK | Cross-compilation | Yocto Project | C++ | SSH

Blogram – Multi-user Live Blog Platform **blogram.com.tr**

- Full-featured blog platform with Google/GitHub OAuth2 login, a rich text editor, caching, and complex database relationships.
- Stack: Laravel | Livewire | Bootstrap | jQuery | Jodit Text Editor | OAuth2

ESP32-S3 IoT Firmware and OTA Update System(Live here 🔗)

- Developed ESP32-S3 firmware for sensor data acquisition and transmission to a server.
- Implemented an Over-the-Air (OTA) firmware update workflow to support remote device updates.
- Integrated sensor readings with a server-side application for telemetry monitoring.
- Stack: ESP32-S3 | ESP-IDF | C | I2C | AHT15 | OTA | HTTP | IoT

COMMUNITY & CONTENT

Telegram Channel – Embedded Systems & Learning Posts

- Curate and share embedded systems resources including book notes (e.g., Making Embedded Systems, The Art of Electronics), technical articles, and personal Medium posts on microcontrollers and low-level programming.
- Covers STM32, communication protocols (UART/I2C/SPI), sensor interfacing, and real-time system design topics — reflects consistent self-directed learning outside of academia.

LANGUAGES

- **English(B2)**
- **Turkish(Native Language)**