Metehan DOĞAN

Electrical and Electronics Engineering
(Double Major) Computer Engineering
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Metehan DOĞAN
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About

I am Ben Metehan Doğan, a curious, ambitious, and inquisitive engineer who always strives to put my interest in technology into practice. I enjoy innovative thinking, problem-solving, and discovering new technologies. To develop myself, I continually work on new projects, conduct research, and make an effort to gain a broader perspective by drawing on different disciplines.

Education

•Eskişehir Osmangazi University *2019-2025*
Electrical and Electronics Engineering, Eskişehir GPA/Percentage: 2.51/4

•Eskişehir Osmangazi University *2021-2026*
(Double Major) Computer Engineering, Eskişehir GPA/Percentage: 2.64/4

Experience

•BilTAY Technology *16/07/2024-13/09/2024*
Intern R&D Engineer (.NET) Eskişehir

– In the project I was involved in, I used the ESP8266 (NodeMCU) module to collect data from different types of sensors (for instance, temperature, humidity, etc.) and then transmitted these data to web servers in real time or at specified intervals. During this process, I focused on aspects such as Wi-Fi connection management, data formatting (JSON, XML, etc.), protocol selection (HTTP, MQTT, etc.), and reliable data transfer (via TCP/IP). This approach enabled me to establish a flexible system that could address both instant data transfer scenarios and transmissions at set intervals. To process and visualize the collected data, I developed applications using the .NET Framework and .NET Core platforms. These applications stored data in a database layer, retrieved it via relevant APIs, and presented it in real time through user-friendly interfaces. Consequently, I created a high-performance, scalable infrastructure while providing sensor data in meaningful graphs or tables. Additionally, I communicated with devices like the ZKTeco SC403 over TCP/IP to gather personnel and entry-exit records, which I then processed and integrated into corporate reports, payroll systems, or shift tracking operations. Through these steps, I acquired the ability to build an end-to-end data collection and management system and experienced seamless interaction between embedded systems (ESP8266) and desktop/web-based software (C, ASP.NET Core, etc.).

•TUBİTAK BİÇABA *15/04/2023-15/10/2023*
Scholarship Intern Researcher Eskişehir

– Within the scope of the TÜBİTAK-BİÇABA program, I worked for six months on the project titled "Development of High-Awareness and AI-Based Numerology Allocation Algorithms for 6G," led by Dr. Lecturer Ahmet Yazar. During this time, I diligently pursued the project objectives, actively participating in research, algorithm development, and testing processes. Together with my advisor, Dr. Ahmet Yazar, I also conducted detailed studies on 5G and 6G communication technologies under the NextGCT-IRG community. This experience allowed me to gain both theoretical and practical knowledge of next-generation communication technologies.

•Kocaeli Metropolitan Municipality *04/07/2023-21/07/2023*
Intern Kocaeli

– During my internship, I thoroughly examined the level of usage of renewable energy sources (particularly solar energy) in Turkey and around the world, as well as the types of sources that are more prevalent. Subsequently, I utilized the PVSOL program to design solar panels for the roof of the Kocaeli Metropolitan Municipality Building Control Department and for the roof of the İzmit Fruit and Vegetable Market. I then reviewed the official procedures (licenses, permits, legal regulations, etc.) required to implement these projects and observed the internal workflows within the institution. I also took an active part in fieldwork, carrying out the installation of triple sockets and fuse connections—basic components of the electrical infrastructure—in the workshop. Additionally, I joined in projects involving the installation of city utility poles and the distribution of high-voltage lines, thus gaining extensive experience in both field and office environments. In doing so, I was able to observe the practical steps of energy distribution and installation processes firsthand, reinforcing the necessary technical expertise.

Project

•Multimodal Fusion for Offensive Content Detection *2025*

Computer Engineering – Graduation Project Eskişehir Osmangazi University

- The goal of this project is to increase the accuracy of offensive content detection by using multimodal learning models, evaluating the meaning of meme content through both textual and visual dimensions, creating a new multimodal dataset based on existing ones, and comparing the performance of single-model and dual-model approaches in detecting offensive content.
- Tools & Technologies: VGG16, CNN, Stacked LSTM, Bidirectional LSTM, GloVe, Early Fusion, ASP.NET Core Web API, Angular, MSSQL

•Reflex Test Game *2025*

Computer Engineering Eskişehir Osmangazi University

- An action game designed to measure players' attention and reflex skills. The game features three difficulty levels: Easy, Mid, and Hard. In each level, different actor types (sphere, cube, cone) are randomly placed on the screen. Players earn points by hitting these actors, and scores are displayed in real time.
- Tools & Technologies: Unreal Engine, Blueprint Visual Scripting, Score Widget, Crosshair Widget, GameOver Widget
- Related Study: https://drive.google.com/file/d/1vR2prQx3moGN76JRlTxZl-ck3hkwP9X5/view?usp=sharing

•LI-ION Battery Management System with STM32 *2025*

Electrical and Electronics Engineering Eskişehir Osmangazi University

- In this circuit, I designed a user-interactive control system using an STM32F103 microcontroller, an LCD screen, and buttons. The LCD displays data such as battery voltage, while the buttons provide user input. A Li-ion battery powers the circuit and is managed via a MOSFET for energy efficiency. I used a potentiometer to adjust the LCD's contrast and the ADC module to measure and display battery voltage. Pull-down resistors were added for stability. This design combines efficient energy management with a user-friendly interface, offering a practical and functional solution.
- Tools & Technologies: STM32F103C8T6, Buttons, RFZ44NS MOSFET, BC237 BJT, 3.7V 18650 Li-ion Battery, 2x16 LCD Screen

•Factory Automation Project with NodeMCU *2024*

Summer Internship BilTAY Teknology

- This project aimed to collect humidity and temperature data using NodeMCU, process quantity and scrap (fire) values via two buttons, and send these data to a SOAP service over a Wi-Fi connection managed by the AutoConnect library. EEPROM and LittleFS storage methods were used to ensure system stability. During initial stages, sensor data and button inputs were collected and successfully transmitted to the SOAP service using C. The NodeMCU was then configured via the AutoConnect library to automatically connect to different networks, maintaining uninterrupted data transmission. Transitioning from EEPROM to LittleFS provided more flexible data storage. As a result, a NodeMCU-based system was created to seamlessly and reliably transmit real-time data with automatic network management.
- Tools & Technologies: NodeMCU (ESP8266), Buttons, 2x16 LCD Screen, I2C Module, DHT11 (Temperature & Humidity Sensor), SOAP API, AutoConnect Library

•ESP32-Based Anemometer Application *2024*

Electrical and Electronics Engineering - Graduation Project Eskişehir Osmangazi University

- In this project, an ESP32 microcontroller, a 2x16 LCD screen, an HMC5883L magnetometer, and I2C modules were utilized. The IR sensor in the anemometer measures wind speed, while the HMC5883L magnetometer helps determine wind direction. These measurements—wind speed, wind direction, temperature, and humidity—are transmitted in real time to a dedicated web application via the ESP32. Through this web application, all these values can be viewed and reported instantly. Additionally, the 2x16 LCD screen allows local monitoring of measurement values on-site, enabling continuous observation and assessment of wind conditions and environmental factors both in the field and remotely.
- Tools & Technologies: ESP32, IR Sensor, 2x16 LCD Screen, I2C Module, HMC5883L, Web Server

•Hand Sanitizer Device *2019*

Electrical and Electronics Engineering Eskişehir Osmangazi University

- It can detect hand movements for the use of hearing-impaired people, and after detecting these movements, it activates the mechanism and sprays disinfectant. Meanwhile, it prints the action it has performed on the LCD screen in the system It also explains the process aloud through the speaker in the system.
- Tools & technologies used: Arduino, Water Pump, IR sensor, I2C Module, Speaker, SD Card Module
- Relevant working codes: https://github.com/metra3/Hand-Sanitizer-Device/blob/main/Hand-Sanitizer-Device

Technical Skills and Interests

Programs

- **AutoCAD:** I learned AutoCAD during my university education, working on both 2D and 3D drawings. I effectively used AutoCAD block libraries and layer management while handling details in electrical design projects, such as floor plans, switchyards, and wiring diagrams.
- **Arduino & ESP32:** I began with basic projects on the Arduino platform (e.g., sensor and motor control) and integrated various sensors (temperature, humidity, distance, etc.) into my applications. Through projects like obstacle-detecting robots and sensor-based lamps, I gained experience in communication methods, including I2C and SPI. Moving on to ESP32, I explored features like Wi-Fi connectivity, dual-core architecture, and FreeRTOS. In my capstone project, I used Wi-Fi to transfer sensor data to my own web server, gaining hands-on experience in real-time data monitoring and logging.
- **SketchUp:** I enhanced the visual quality of projects involving façade cladding, interior design, and furniture placement by leveraging SketchUp's built-in components. I also gained experience using different rendering plugins.
- **PVSOL:** I learned to use PVSOL during my internship at the Kocaeli Metropolitan Municipality, where I designed numerous solar panel platforms for rooftops and ground installations.

Programming Languages

- **C:** By developing my foundational algorithms in C, I focused on microcontroller projects involving STM32, Arduino, and ESP32. My work included managing digital and analog I/O, ensuring system continuity via interrupts, and working with communication protocols (UART, SPI, I2C). During my capstone project, I extensively used C for memory management, function design, and embedded library integration.
- **C++:** I utilized C++ in various projects that required object-oriented programming (OOP) features, developing a range of applications tailored to different needs.
- **Flutter:** Taking advantage of Flutter's widget-based structure, I quickly built user interfaces, integrated state management concepts (Provider, Bloc, etc.), and connected backend services (e.g., Firebase) for real-time data tracking.
- **HTML & CSS:** In my capstone project, I developed a web page using HTML and CSS to display sensor data collected from the ESP32 in a user-friendly interface. I used modern CSS techniques like Flexbox and Grid to organize the layout, and I carefully chose color palettes and typography to enhance user experience.
- **C#:** During my 2024 summer internship, I had the opportunity to work on both desktop and web-based applications in C. I gained experience in projects developed on .NET Framework and .NET Core, designing interfaces using Windows Forms.

Certificate

- **Akbank Machine Learning Bootcamp** Global AI Hub *December 2023*
- **Aygaz Deep Learning Bootcamp** Global AI Hub *December 2023*
- **301: JavaScript** Turkcell Geleceği Yazanlar *March 2023*
- **201: HTML5-CSS** Turkcell Geleceği Yazanlar *March 2023*
- **Digital Career Camp** The Engineers *February 2023*
- **101: HTML** Turkcell Geleceği Yazanlar *December 202*
- **6G Conference** Istanbul Medipol University *September 2022*
- **Arduino 101** Turkcell Geleceği Yazanlar *August 2022*
- **Learning C++** LinkedIn Learning *August 2022*
- **UAV - 1 - Sportive** / **Amateur** SHGM *August 2021*

Reference

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