Muna Abu Jaber

munaabujaber@outlook.com
(387) 60-31-66-032
Sarajevo, Bosnia and Herzegovina
linkedin.com/in/muna-abu-jaber
github.com/munaabujaber

Embedded AI Engineer

Embedded AI Engineer specializing in intelligent edge devices, with expertise in STM32 firmware, PCB design, and TinyML deployment. Combines 3+ years in automotive embedded systems with skills in motor control, FPGA development, and hardware-optimized AI to create efficient solutions. Experienced in full-stack embedded development, from custom PCB design to deploying ML models on resource-constrained devices. Excels in roles merging embedded systems with AI/ML, particularly for robotics, industrial IoT, and edge computing applications.

Work Experience

Embedded Systems & Test Engineer (Hybrid, Full-Time) *August 2022 – Present*

***Maasu BH d.o.o.**, Sarajevo, Bosnia and Herzegovina*

- Worked closely with clients and engineering teams within the German automotive industry, following the V-model development process.
- Lead unit & integration testing of a harvesting robot, developed with Python and ROS in a Linux environment using pytest.
- Designed and executed C++ unit tests for electric drive systems in commercial vehicles using Google Test, ensuring robust coverage and compliance with automotive quality standards.
- Designed high-level software architecture diagrams and system-level test specifications using Enterprise Architect, based on requirements and use cases.
- Authored system-level test specifications and test cases for electric drive software in Codebeamer, ensuring consistency with defined software requirements.
- Led the scaling and verification of embedded control software developed in MATLAB Simulink for electric drive systems, utilizing Polyspace and MXAM.
- Led and managed an internal R&D project as Product Owner and multi-disciplinary engineer (system, hardware, and software) for a custom small-scale autonomous vehicle prototype, contributing to system architecture, technical implementation, and documentation.
- Fully designed and developed two custom STM32-based PCBs in KiCad for a small-scale autonomous vehicle: one for interfacing with a BLDC motor controller and inverter for rear-wheel drive, and the other for sensor integration and steering control via a DC motor controller. Scope included schematic design, component selection, PCB layout and routing, Gerber file generation, and managing communication and orders for manufacturing and assembly.
- Developed embedded firmware and software in C for the two custom STM32-based PCBs using the STM32Cube environment, HAL library, FreeRTOS, and Micro-ROS. Enabled real-time motor control via on-board motor drivers and sensor data processing, leveraging multi-threading in FreeRTOS and utilizing communication protocols such as I^2C, UART, and SPI.
- Fully 3D modeled the custom autonomous vehicle in Blender, including 3D printing and the complete manual assembly of both mechanical and electrical components.

SoC Design Engineer (Remote, Part-Time) ***July 2022 – September 2022***

Chili Chips LLC*, California, USA*

- Contributed to the ongoing design and implementation of a custom RISC-V-based processor using SystemVerilog 2017, targeting the GOWIN platform on the Tang Nano 9K FPGA board for educational and embedded applications.
- Took part in the development of *eduBOS5*, the first Bosnian educational RISC-V processor, focusing on instruction set architecture and RTL-level design.
- Authored and documented technical content for an educational book on low-level processor design, covering HDL fundamentals, RTL design, and hardware development workflows.
- Assisted with early-stage simulation and verification of processor modules to validate pipeline behavior and instruction execution logic.
- Collaborated remotely with an international team, following best practices in code organization, documentation, and version control.

Teaching Assistant – Programming for Engineers (On-Site, Part-Time) ***February 2022 – May 2022***

International University of Sarajevo*, Sarajevo, Bosnia and Herzegovina*

- Led bi-weekly tutorial sessions for undergraduate students in C and C++, focusing on programming logic and foundational concepts.
- Assisted students in understanding low-level programming principles relevant to systems and embedded development.
- Created and explained code examples that emphasized structured programming, memory management, and algorithmic thinking.
- Provided one-on-one support to students during lab exercises, debugging sessions, and assignments.
- Collaborated with the course instructor to ensure alignment between lectures and tutorials, reinforcing key engineering problem-solving skills.

IT Intern (Remote, Part-Time) ***February 2022 – March 2022***

Energoinvest d.d.*, Sarajevo, Bosnia and Herzegovina*

- Gained practical experience with Agile methodologies, including Kanban and writing effective User Stories.
- Learned and applied version control using Git for collaborative software development and codebase management.
- Contributed to the development of a React-based web application for visualizing air quality data.
- Strengthened understanding of the interaction between frontend applications and embedded hardware systems.
- Enhanced skills in debugging and testing software modules for data consistency and performance.