Profile

Software Engineer with experience in the design of industrial projects from the proof of concept to the manufacturing phase. Skilled in product development for IoT, qualified in battery-powered devices and modular robust firmware architecture.

Contact

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WEB
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SKILLS

Firmware development (**C11**, GCC-ARM, **MISRA**, Doxygen);
CI, Jenkins, Grafana, Docker, Linux administration.
Industrial communication protocols, **CAN**, **Ceedling**, static and dynamic analysis, **FreeRTOS**, **Zephyr OS,** Low-level hacking(JTAG and embedded I/O: I2C, SPI, UART), SMD soldering, **ARM MCUs, Architecture design, UML**, **Debugging**, disassembly(Ghidra), **assembler**, **git**, **IoT**, **Project management**, **Python, Buildroot**/Yocto, kernel drivers, PostgreSQL, NodeJS, Teamwork, **Technical writing**,

Andrii Shylenko

Software Engineer - building rock solid firmware

WORK EXPERIENCE (most recent first)

Firmware Engineering Consultant.
Helping Companies and individuals to build IoT devices.
January 2023 - current time

Key Projects and Accomplishments:
Lead developer for Low-cost Bluetooth-enabled Telematics Unit (STM32H5 + FreeRTOS)
Technical specifications and requirements for a cost-effective telematics unit. Planning and project management.
Created Architecture and plan for code refactoring based on existing codebase,
Firmware for the STM32H5 microcontroller with data logging capabilities, integration tests, unit tests. Integrated a Quectel modem for wireless connectivity, Bluetooth module for local communication.
Development of CANOpen stack.
Designed a CI pipeline to build and test code in for "nightly" builds.
WiFi and Bluetooth Connectivity for over CAN Telematics(Proemion clm3600)
Implemented robust **WiFi** and Bluetooth(**BLE**) connectivity for a CAN-based telematics solution.
Worked closely with the hardware team to ensure optimal performance and compatibility of the wireless SAP in WiFi modulel.
Ensured compliance with industry standards and regulations for wireless communication (Japan MIC).
Implementation of UDS connectivity with TTC ECUs.
Implementation of File Transfer functionality for FOTA updates via HTTPS.
Air Quality Monitoring Device (Zephyr, ESP32, and RP2040)
Developed a comprehensive architecture for an IoT-based air quality monitoring device. Implemented secure and efficient OTA update mechanisms for the device firmware. Integrated ESP32 and RP2040 microcontrollers over interchip communication.

Railnova S.A., Embedded IoT Engineer,
March 2022 - January 2023

Reverse engineering trains, clients consulting.
Getting data from locomotives via CAN protocols: J1939, CANOpen, BCM2CAN; MVB, and Voith.

I have developed an MVB bus signal acquisition analysis application using Python and C to process incoming MVB message data and diagnose it for anomalies.
For the purpose of data acquisition from locomotives, I have developed a series of applications in Python to extract parameter mapping from user documentation and implement them in data sent via MQTT. Part of my job is to perform data analysis (Jupiter/Pandas) and create design documentation for the Railster (**Dual Arm Cortex** + FPGA platform) project based on **Embedded Linux** and write technical reports for customers.

LANGUAGES

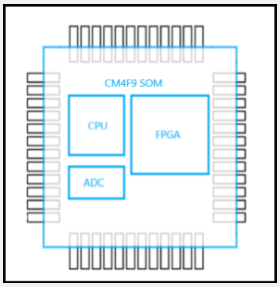
English: fluent (speaking, reading, writing)
Ukrainian: native.
Russian: native.
Polish: fluent (speaking, reading, writing)
Hungarian: basic.

HOBBIES

3D printing,
Playing and building electric guitars,
Salsa,
Maui Thai,
Public Speaking (Toastmasters).

Consulting: Custom Chip Solutions, Firmware Architect
November 2021 - June 2022

ARM/FPGA System Design. Architected the firmware and hardware interaction for a custom **ARM Cortex-M3** based platform. Responsible for the system-level design ensuring seamless data flow between the MCU and FPGA.



Protocol Implementation for an SPI stack to handle high-speed **IO** between processors. Mapped and documented configuration registers for all custom peripherals.
JTAG and System Programming. Implemented an **SVF** player mechanism to manage FPGA configuration updates via the MCU.

Itron Labs Kft., Budapest, Firmware Engineer
October 2019 – March 2021

Architecture, code implementation, tests, documentation for a new generation of water static metering devices (Intelis), communication via WM-Bus and Lora: customer application, upgrade procedure, upgrade microprogram with AES encryption, WMbus data objects.
I worked in a big team where I built interprocessor communication based on interrupts and SPI while utilizing DMA to offload MCU and increase communication speed.
I have implemented customer applications based on the marketing requests: such as detecting the leakage, air in the pipe, or water usage per month.
I have researched and developed fixes to a heat cost allocator device, which experienced problems with Hard resets in the field—fixes to the interrupt handling in radio firmware and no communication problem due to WOR misconfiguration.
I have built an update microcode(bootloader in C) to apply encrypted firmware and ensure that the SW, HW, and user settings are correct.

Ifm ecolink s.p. z o.o. Embedded Software Engineer, Application Engineer, R&D.
2015–2019

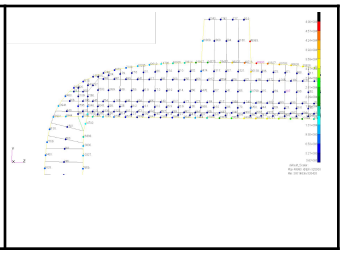
PLC software development (**IEC 61131-3**, ST, FBD) with GUI (**Codesys**).
Software engineer for **Industrial IoT** based on the **IO-link** technology.
While working in a small international design team, several devices and actors have been created and successfully brought to the market.
• Specification writing, requirements definition, competitors analysis:
Concept of parameters (debouncing, signal hold) for IO-link Digital Input module, user manual; configuration API, concept and specification for CAN2IOlink module.
• Code modules **architecture** (UML/Enterprise Architect):
Designed digital inputs filtering architecture, state machine diagrams for short circuit handling, sequence diagrams for inter-processor communication, etc.
• Embedded C development (**C11, GCC-ARM, MISRA, Doxygen**):

AL2x30 IOLink DO modules

CAN to IOLink module prototype

Implementation of the software and unit tests for digital filters in DI module, CAN driver, Error Handling state machine, LEDs driver, inter-processor communication, Bootloader. ● Unit, integration, and system testing of DI and DO devices. ● IEC EN 61000-4-x EMC and IO-Link conformance tests. ● Production support (Python scripts), production procedures: I created a procedure and Python app for serial number flashing via IO-link, and an application for readout code protection.	 AL2x40 IOlink DI modules

Antonov State Company, Kyiv, Ukraine.
Design engineer (aeronautical). Department of fuselage design, strength calculations (FEM).
2012–2014

Design and strength calculations of the cargo aircraft tail unit elements: I have created the AN-178 tail section Former FEM design using calculation in Excel/Mathlab and built a FEM model to test loads on the part. I have calculated AN-148 skin stringers strength and fuselage skin stability.	

EDUCATION

National Aerospace University "KhAI", Kharkiv, Ukraine, 2007 - 2013
Aircraft and helicopter structure and design. Master's degree.
Opole University of Technology, Opole, Poland, 2014 - 2015
Control systems in automatics and robotics, Master's degree.