Marko Štumberger

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About Me

Computer engineering graduate with extensive technical expertise in embedded systems, automation, Internet of Things (IoT), and cloud infrastructure. I have experience in project management, designing end-to-end solutions, software and hardware development, sensor and actuator integration, and building user interfaces. I place special emphasis on reliability, ease of use, and possibilities for remote monitoring and updates.

I am also active in the field of smart agriculture, where I develop open-source solutions for beekeepers, based on real-time weight measurement, motorized lid mechanisms, and process monitoring.

Work Experience

Technical Lead – Project RAM and other IoT solutions
IZOELEKTRO d.o.o. — 1/2023–present
Leading the development and implementation of a leakage current monitoring system for surge arresters (RAM project), including devices with nRF chips and LoRa communication, custom cloud infrastructure (AWS IoT Core, MQTT, Device Shadow), and a complete support ecosystem: from lab tests to user settings and visualization. Developed Python algorithms for measurement interpretation, SDK for server integration, solved Linux system service issues, and collaborated with external partners on firmware development.

Software Developer – Sportradar d.o.o.
1/2022 – 12/2022

- Development of new code for existing systems.
- Worked with AWS services: API Gateway, Cognito, Python Authorizer, Secret Manager.

QA Developer – Sportradar d.o.o.
5/2020 – 12/2021

- Designed regression tests and performed backend testing.
- Upgraded and maintained testing frameworks, developed a new test framework.
- Migrated from Jenkins to GitLab pipelines, automated load testing.

Control System Programmer – Ledinek Engineering d.o.o.
1/2018 – 4/2020

- Full-stack SCADA development for CLT production lines.
- RFID terminals for workers, integration with PLC systems.
- Monitoring of main servers with Zabbix.

IT Technician Assistant – Na Zvezi d.o.o.
3/2016 – 12/2017

- Terminal configuration, backend development for Info Display and Terminal Recorder projects.
- Built Docker images, used Marathon platform.

Education

DOBA Faculty, Maribor
BSc in Informatics Engineering — 2025
Technical Secondary School of Electrical Engineering, Ptuj — 2011

Technical Skills

Languages: Python, Java, C/C++, Bash, JavaScript/TypeScript
Embedded Systems: Raspberry Pi, ESP32, STM32, nRF91/nRF52
Cloud/IoT: AWS IoT Core, MQTT, Node-RED
Tools: Git, Docker, STM32CubeIDE, Fusion 360
GUI/Frontend: tkinter, React.js, OctoPrint
3D Modeling: Fusion 360, 3D printing for prototypes

Selected Libraries and Tools Used

- **pandas, numpy** – data analysis and processing of leakage currents (RAM project).
- **matplotlib, seaborn** – visualization of time series and algorithm validation.
- **Flask** – REST API for local testing of algorithms.
- **MQTT (paho-mqtt)** – communication ESP32 RPi (e.g., weighing, sensors).
- **RPi.GPIO, lgpio** – motor, LED, and buzzer control on Raspberry Pi.
- **tkinter** – GUI development for the honey dispenser.
- **Zephyr RTOS** – firmware for nRF91 (LTE-M/NB-IoT).
- **STM32 HAL/CMSIS** – HX711 weight measurement, servo control (MG996R).
- **TMC2209** – UART control of stepper motor for lid mechanism.
- **EC11 encoder** – user interaction for settings.
- **Git, GitHub** – open-source project management, CI/CD.
- **Node-RED** – visual integration of MQTT and device management.

Selected Projects

- raspi5_honey_dispenser – Thesis project - Honey dispensing scale.
- smart-home – MQTT-based smart home automation.
- SpeedTestLogger – Internet speed logging in Python.

Additional

- SDK and REST client in Python, integration with IoT devices.
- Knowledge of LoRaWAN (TTN), eSIM, BLE, and SIST security standards.
- Mentoring, technical documentation, and user presentations.