Marko Vuković

Embedded Software Engineer

ABOUT MARKO

Experienced Software Engineer with a demonstrated history of working in the electrical and electronic manufacturing industry. Skilled in **Embedded Software (mostly C), C++, Delphi, and Python.**

5 years of experience working in the Programming&Debugging team in MikroElektronika. Winner of a Marie Skłodowska-Curie fellowship in 2020 in the DIGIMAN 4.0 project and a Ph.D. research fellow at the University of Pisa in the Smart Industry program.

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REFERENCES:

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Associate Professor, University of Pisa
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Ivan Rajković
Principal Engineering Manager, Microsoft
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Darko Jolić
Senior Firmware Engineer, West Pharmaceutical Services
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PROFESSIONAL WORK

Early Stage Researcher - Marie Skłodowska-Curie Action Fellow
UNIVERSITY OF PISA, DEPARTMENT OF INDUSTRIAL AND CIVIL ENGINEERING
MAY 2020 - PRESENT

Embedded Software Engineer
MIKROELEKTRONIKA
AUGUST 2015 - MAY 2020

- Designing, developing, coding, testing, and debugging system software in the Programmer and Debugger team.
-Analyzing and enhancing efficiency, stability, and scalability of system resources.
-Providing post-production support.

Software Intern
MIKROELEKTRONIKA
JUNE 2015 - AUGUST 2015

- Designing and developing a home security IoT project.

ACADEMIC BACKGROUND

University of Pisa, Department of Industrial and Civil Engineering

PHD CANDIDATE

-Thesis: Embedded IoT Solutions for Industry 4.0 Manufacturing Process Digitalization

University of Belgrade, Faculty of Electrical Engineering

MASTERS DEGREE

-Thesis: Hardware implementation of Beneš switch

University of Belgrade, Faculty of Electrical Engineering

BACHELOR DEGREE

-Thesis: Implementation of unblocking algorithm in Clos switch

WIFI PROGRAMMERS AND HARDWARE DEBUGGERS

I worked on the development of both firmware and software during the CodeGrip project. The software was developed in the C++ (QT framework), and the firmware was developed in mikroC. Communication with the software was done over the USB HID protocol or WiFi. Communication with target devices was done over SWD and JTAG for ARM devices, and ICSP and EJTAG for PIC devices. This device has also been patented by MikroElektronika in the name of my team.

CODEGRIP FOR ARM

CODEGRIP for ARM is a fast USB-C and WiFi programmer and hardware debugger. It supports ARM Cortex M0, M3,M4 and M7 based MCUs (1611 MCUs in total).

CODEGRIP FOR KINETIS

CODEGRIP for Kinetis is a fast USB-C and WiFi programmer and hardware debugger. It supports Kinetis Cortex M0, M4 and M7 based MCUs (637 MCUs in total).

CODEGRIP FOR STM32

CODEGRIP for STM32 is a fast USB-C and WiFi programmer and hardware debugger. It supports STM32 Cortex M0, M3,M4 and M7 based MCUs (852 MCUs in total).

CODEGRIP FOR TIVA

CODEGRIP for Tiva is a fast USB-C and WiFi programmer and hardware debugger. It supports ARM Cortex M4 based MCUs (120 MCUs in total).

PRODUCTION BURNER

XDP™ OTP PRODUCTION BURNER FOR SMPS

XDP™ OTP Production Burner for SMPS is a specialized tool for programming Infineon's XDP™ Switching Mode Power Supply ICs (SMPS) from DP2A and DP2B families.

I worked on the development of the firmware, from the start of the project, as the lead engineer of firmware development. It was necessary to develop the communication of the software application, over the USB HID protocol, for which I made a custom communication protocol. One-Wire protocol was required to program the target devices.

It was also necessary to control the voltage over which the devices were powered. The programming was done over the internal Flash of the burner or the SD Card. I designed the burner so that it can program up to 4 devices at the same time. During the second development phase of the project, I became the technical lead and coordinated the software and firmware development.

PROJECTS

PROGRAMMERS AND HARDWARE IN-CIRCUIT DEBUGGERS

I inherited a code which I maintained and further developed for software in Delphi and firmware in the Microchip MPLAB environment. I had an opportunity to work with the largest vendors of microcontrollers in the world, such as Microchip, NXP, STM, Texas Instruments, etc.

MIKROPROG FOR PIC, DSPIC AND PIC32

mikroProg for PIC, dsPIC and PIC32 is a fast USB 2.0 programmer with mikroICD hardware In-Circuit Debugger. It supports **PIC10, PIC12, PIC16, PIC18, dsPIC30/33, PIC24 and PIC32** devices.

MIKROPROG FOR KINETIS

mikroProg for Kinetis is a programmer and hardware debugger for NXP's ARM Cortex™-M microcontrollers from the **Kinetis** family.

MIKROPROG FOR MSP432

mikroProg™ for MSP432 is a USB programmer and hardware debugger. It supports the SimpleLink™ MSP432™ microcontroller family from Texas Instruments.

MIKROPROG FOR TIVA

mikroProg for Tiva is a fast programmer and hardware debugger. mikroProg supports all **Stellaris and Tiva** C Series ARM Cortex™-M3 and M4 devices.

MIKROPROG FOR CEC

mikroProg for CEC is a programmer and hardware debugger. It supports the **CEC cryptographic** engine with secure firmware updating.

MIKROPROG FOR STM32

mikroProg for STM32 is a fast USB 2.0 programmer and hardware debugger based on ST-LINK v2.

MIKROPROG FOR FT90X

mikroProg for FT90x is a programmer and hardware debugger. It supports all of **FTDI Chip's FT90x** devices in a single programmer.

PROJECTS

OTHER PROJECTS

HOME ALARM

As a project during my internship at MikroElektronika, I developed a home alarm that was made out of the Clicker 2 for SMT32, GSM click, Motion click, SD Card click, and Camera click (FT900).

The goal of the project was to develop the firmware which takes photos with the Camera click after Motion click is triggered. Afterward, it sends an SMS message over GSM click, and also sends an email with the images that Camera click captured.

During the time Motion click is active, pictures are being taken and stored on the SD card. The project was developed with MikroElektronika tools (both hardware and software).

HEXIWEAR DOCKING STATION

I adapted and further developed the DAPLink firmware for the Hexiwear Docking Station. Hexiwear is a small, portable development tool powered by the Kinetis K64 32-bit ARM® Cortex®-M4 MCU.

SKILLS

Embedded Development

FIRMWARE

- Designing, developing, and debugging real-time embedded systems
- Developing firmware in Python, C and Assembler
- Working with various architectures: ARM, MiPS, FTDI, AVR
- Performed hardware/firmware testing to specification and created safety documentation
- Developed firmware for critical industrial applications

SOFTWARE

- Integrating software/firmware with different hardware platforms
- Working in QT and Delphi environment
- Data visualization with Grafana dashboard
- Making data processing scripts with MATLAB and Python

PROJECT MANAGEMENT

- Working in an agile project environment - JIRA
- Working in a version-control system - GIT and SVN

LANGUAGES

English
FULL PROFESSIONAL PROFICIENCY

Italian
WORKING PROFICIENCY

French
LIMITED WORKING PROFICIENCY