Oleksandr Redchuk

Software Engineer

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Summary

Embedded software/hardware engineer with more than 25 years of professional experience. Main industries are medical and automotive equipment, public safety (fire detection and alarm). The main area of expertise is Linux kernel, RTOS, firmwares on ARM-based devices as well as 8-bit microcontrollers. For the last 4 years mostly work on downstreamed kernels (driver development and customization) and RTOS-based firmware on Cortex-A (32-bit) + Cortex-M heterogeneous SoC. Has prior background in design of embedded devices including SW and HW: electronics, algorithms, Bare-Metal and RTOS-based firmware development.

Experience

2021- Software Engineer, Auto-talks

Present Projects: Automotive V2X devices.

Role: Driver development in Linux kernel, firmware development

- O Custom kernel driver development
- O Adding new features to standard kernel drivers
- O Migrating to new kernel version
- O Bug fixing (drivers, device tree, frimware)
- Hardware debugging

2020–2021 Software Engineer, GlobalLogic, Kyiv

Project: Medical IoT device (ESP32, FreeRTOS)

Role: Leading of a small team, SW/HW development.

- O Development and optimization of algorithms
- O Developing data acqusition and processing software
- O Hardware debugging, schematic fixing and optimization

2018–2021 Software Engineer, GlobalLogic, Kyiv

Project: Automotive device.

Role: Driver development in Linux kernel, firmware development

- Custom WiFi driver implementing and speed optimization
- O Hardware encryption accelerator driver speed optimization
- O Adding new features to standard kernel drivers
- Firmware development (Cortex-M)
- O Bug fixing (drivers, device tree)

2006–2018 Chief SW/HW engineer, Ista-Sital, Kyiv

Projects: Fire detection and I/O devices.

Role: Driver development in Linux kernel, firmware development

- O Custom WiFi driver implementing and speed optimization
- O Hardware encryption accelerator driver speed optimization
- O Adding new features to standard kernel drivers
- Firmware development (Cortex-M)
- O Bug fixing (drivers, device tree)

2015–2017 SW/HW engineer (part time), National Aviation University, Kyiv

Project: Dedicated dead reckoning module — GPS emulator for Ardupilot mega.

Role: SW/HW development

- O FORTRAN to C++ code porting
- o test-vector-based PC verification.
- O Implementation in microcontroller (STM32F303)

1999–2006 Head of Electronic Systems Department, Teleoptic, Kyiv

Project: Line of multi-sensor medical digital X-ray detectors (international patent WO2006049589A1 and Ukraine patent)

Role: SW/HW development

- O CCD cameras and data acquisition system (AFE and digital part) hardware design.
- O Non-standard CCD timing design.
- O PC to hardware control protocol design
- O Embedded software (microcontrollers and programmable logic) development
- O Windows 98/NT/XP control/data communication DLL
- 1985–1999 Many interesting but outdated projects

Education

1980–1985 Master's degree, Kyiv National University, Kyiv

Speciality: Radio physics and electronics

Computer skills

Languages C, Bash Projects Linux kernel, RTOS, Bare Metal

CPUs ARM32, x86 MCUs STM32, LPC17xx, AVR, MCS51

Tools GCC, GDB, Make, Git, Vim HW Tools scope, logical analyzer, JTAG

Languages

Ukrainian Fluent My native language

English Intermediate Speaking, reading and writing

Other Activities

2017–Today Translation of techical books from English to Ukrainian

- o CLRS 3d ed. (translator)
- o "Python crash course" (editor)
- o new projects work in progress...

2016–Today Member on StackOverflow (>1k reputation) [1]

2020–2021 Instructor of Linux kernel courses

1998–2018 Creator of AVReAl – AVR ISP programming software for MS-DOS, Windows, Linux and FreeBSD [2]

References

- [1] https://stackoverflow.com/users/8848476/real
- [2] https://real.kyiv.ua/avreal/