Artem SHAPOVALOV

Senior Software Engineer
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SUMMARY

Senior Embedded Software Engineer with 10+ years of experience in real-time firmware, embedded systems, and desktop utilities across automotive, aerospace, and industrial sectors. Specialized in STM32, FreeRTOS, C/C++, and embedded Linux. Complemented by hands-on experience with backend (Java, Spring Boot) and frontend technologies (HTML, CSS, JavaScript), giving a well-rounded perspective on system design and integration. Comfortable supporting architectural reviews, onboarding, and workflow planning when needed — including during team lead absence. Known for maintainable, well-documented code and contributing to team resilience. Open to relocation and committed to long-term collaboration with a balanced, cost-effective profile.

SKILLS

Programming Languages: C, C++, Python, Java, JavaScript, SQL, Bash

Embedded Systems & Platforms: STM32, AVR, MSP430, ARM Cortex-M, MIPS, bare-metal, Embedded Linux, FreeRTOS, TI-RTOS, bare-metal programming, QNX, Interrupt handling, bootloaders, HAL/LL libraries, device drivers, fault tolerance, OTA updates, real-time scheduling, Matlab Simulink, discrete-time simulation, system modelling

Communication Protocols: UART, SPI, I2C, CAN-bus, LIN, RS485, Ethernet, Mavlink, TFTP, UDP, ARP, TCP, NMEA GPS, Futaba S-Bus

Development Tools & IDEs: Vim, Visual Studio, Eclipse, IAR Embedded Workbench, Code Composer Studio, MSYS2, CMake, GNU Make, OpenOCD, Valgrind, GNU Toolchain, Doxygen, Jenkins, GitHub Actions, CCCC (code metrics), Source Trail, static code analysis, Raspberry Pi, Orange Pi, Armbian

Version Control & Workflow Tools: Git, SVN, Mercurial, Redmine, Jira, Trello, Github Actions

Framework & Libraries: Qt, Boost, Spring Boot, FLTK, Electron

Web & Backend Technologies: HTML, CSS, JavaScript, gRPC, Java (backend), Gradle, Log4j

Testing, Validation & Documentation: CppUTest, CppUMock, CppCheck, logic analyzers, oscilloscopes, Doxygen, Model-driven development (Simulink), Hardware-in-the-Loop (HIL), unit testing, signal generators, test harness design

Project Methodologies: Agile, Scrum, CI/CD, Waterfall, V-Model, Microservices, iterative prototyping, test driven development

CAD & Hardware Design Tools: LibreCAD, AutoCad, KiCad, P-CAD, Altium Designer, FreeCAD, SolidWorks

PROFESSIONAL EXPERIENCE

Note: position names in each company are translations of local position names, each company have it's individual grade that may not fit together.

Senior Software Engineer, DSR Corporation, Tashkent, Uzbekistan
Jun 2023 – Present

International software development company with offices in the US, Portugal, Japan, and Uzbekistan; member of the CSA Alliance and contributor to the ZBoss Zigbee stack.

- Collaborated with global clients across embedded, desktop, and cloud-integrated projects
- Developed GUI of a Windows audio mixer application using Qt and message bus architecture; improved performance and user experience significantly to competing software; successfully adapted to frequent changes and enabled project delivery on schedule – leading to a follow-up contract from a satisfied client
- Supported legacy C++ codebase (40 GB+, dating back to 1990s) on an Israeli web-based system with complex microservices, Spring Boot backends, and browser/desktop clients; focused on bug fixing and stability improvements
- Authored developer documentation and onboarding guides for an internal Matter stack implementation; facilitated easier controller and device development; made interactive Bash scripts that generate Matter device/controller templates in minutes, accelerating adoption and ease the user experience

Technologies used: C++, Qt, Boost, Cmake, Spring Boot, Java, JavaScript, Python, Bash, HTML/CSS, SQL, Visual Studio, gRPC, Agile, Jira, Git, SVN

Embedded Software Engineer, Axel MWD, Tashkent, Uzbekistan
Sep. 2022 – Jun. 2023

Local engineering company producing embedded measurement systems for the oil drilling industry.

- Developed internal desktop utilities for sensor diagnostics and data survey
- Maintained and extended embedded software for TI MSP430-based platforms
- Led platform migration analysis for upcoming sensor devices, evaluating multiple MCU options (including Infineon) based on cost, tooling, availability, priceing, vendor support, and long-term risk; created a functional system diagram based on business requirements from the company owner; outlined hardware modules, their responsibilities, and potential bottlenecks

Technologies used: C++, Boost, TI-RTOS, MSP430, FT232, FLTK, Linux, AVR, GNU Toolchain, MSYS2, Windows

Lead Software Engineer, VR-Technologies, Moscow, Russia
Apr. 2021 – Sep. 2022

Local aerospace company developing an unmanned helicopter platform for search and rescue, agriculture, and cargo transport; sponsored by stakeholders from the UAE

- Took ownership of unstable inherited codebase for an autonomous flight control system after full turnover of previous team
- Analyzed system architecture and identified critical issues in safety, timing, and hardware integration; some defects previously led to in-flight crashes, developed and ran performance testing utilities to validate core flight algorithms timings; audited CAN-bus data exchange protocol, normalyzed payload
- Designed and implemented a unified software architecture, replacing slow FreeRTOS scheduling with optimized bare-metal loops to meet real-time deadlines (400 Hz)
- Conducted system modelling and requirements analysis; created functional diagrams, refactoring plans, and coding standards

Technologies used: STM32, FreeRTOS (replaced), C++, ANSI C, Mavlink, VectorNAV GNSS, Simulink (model-based code), CAN-bus, logic analyzers, CppCheck, CppUTest, V-Model

Other Jobs

- Embedded Software Engineer, MPZ, Moscow, Russia | Oct. 2018 – Jan. 2021
  - Maintained communication unit for MIPS/uOS-based system. Replaced LwIP with custom UDP stack, Built LED panel, assisted in HIL testing.
  - Tech: C, MIPS, UDP, CAN, Ethernet, NI LabVIEW, LwIP
- Junior Software Engineer, TEC Electronics, Moscow, Russia | Apr. 2017 – Sep. 2018
  - Analyzed CAN bus for vehicle behavior detection. Proposed parser test approach and implemented behavior control algorithms.
  - Tech: STM32, CAN, LIN, IAR, bare-metal C
- Electronics Engineer, GosNIIP, Moscow, Russia | Feb. 2014 – Apr. 2017
  - Designed PCBs, test harness, and analog modules. Developed AVR-based test devices and contributed to QNX-controlled automated testing platforms for industrial systems.
  - Tech: AVR, C, QNX, LibreCAD, KiCAD, oscilloscope, logic analyzer.

PROJECTS

Sea | https://github.com/Artem-Shapovalov/sea

Minimal interactive tool that builds C/C++ project without scripts. Recursively compiles all sources and thack changes.

- Written in old-school C++ with terminal UI for quick setup
- Avoids overengineering: 'Relax, you're not in a tech interview'

MTK | https://github.com/Artem-Shapovalov/MTK

Portable GUI toolkit for embedded systems with small monochrome displays.

- Includes desktop simulator, custom bitmap conversion tool, and compact English font
- Easy to port, not requires dynamic memory, small footprint, may be used everywhere.

Linky | https://github.com/Artem-Shapovalov/Linky

Simulink-like modeling tool for discrete-time systems with C code generation (archived prototype).

- Produces branchless ANSI C code with predictable memory/timing
- GUI, signal simulator, and codegen engine build solo

EDUCATION

2009 – 2014, MGUPI/MSUIECS, Moscow State University Of Instrument Engineering and Computer Science, Russia, Moscow

Student, Specialist Degree (pre-Bologna Master equivalent), qualified electronics engineer. Attended additional classes for C language.

- Focus: Measurement Systems, Digital Electronics.
- 2nd Place – University Student Research Conference
- Awarded Educational Grant for Academic Excellence