Roman Storozhenko

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Summary

- Linux Kernel, Embedded and Firmware developer enabling the latest RDT HW in SW for Intel® Xeon® CPUs: Intel RDT utility
- Author [Exploring ELF files using pyelftools] & [Core Knowledge That Modern Linux Kernel Developer Should Have]
- Volunteer participating in hackatons and awards as a mentor and judge [Globee]
- RISC-V enthusiast having certifications [RVFA]
- Community member in RISC-V International
- Individual Supporter in The Linux Foundation organization
- Graduate from the "Linux Kernel Bug Fixing Spring Unpaid 2024" mentorship program [Graduation confirmation]
- Linux Kernel contributor [patches]
- Developer enthusiast [GitHub]
- Industry expert asked on Linux Kernel topics [Linux Developer Skills: Everything You Need to Know]
- Recognized technical reviewer on Amazon (see "Editorial reviews" section) for books such as Mastering Embedded Linux Development, Linux Kernel Programming, Ultimate Linux Shell Scripting Guide and others.

Skills

- **Linux kernel**: general knowledge, driver development
  - **Advanced, cloud level technologies**: Intel® RDT Framework for Intel® Xeon® CPUs: CMT, L2 & L3 cache CAT and CDP, MBM, MBA, I/O RDT, SNC, CBA, etc...
  - **Architectures**: x86, RISC-V, ARM
  - **Performance & Microarchitecture Profiling**:
    - perf, ftrace, eBPF, pmu-tools, libpfm, pcm
    - Intel® VTune™, Intel® SDE, Intel® Advisor, CS Roofline Toolkit
    - heaptrack, Tracy Profiler, FlameScope, uarch-bench, nanoBench
  - **Networking**: Wi-Fi, Ethernet, Bluetooth Low Energy, PCIe drivers for SR-IOV and S-IOV capable devices
  - **Buses and protocols**: PCIe(3.0 and 4.0), UFS, SCSI, I2C, SPI, 1-Wire, MDIO
  - **IO stack**: VFS, block layer, SCSI- and UFS-based device drivers
  - **Kernel special purpose FS**: procfs, sysfs, debugfs, tracefs, resctrl, hugetlbfs
  - **File systems**: Ext-family
- **Hardware**:
  - **Debug tools**: oscilloscopes, multimeters, bus analyzers
  - **Dev boards**:
    - **RISC-V**: Beagle-V Ahead(Alibaba T-Head TH1520 SoC), StarFive 2(JH7110 SoC), Raspberry PI Pico 2 (RP2350), ESP32-C6, Lichee RV Nano-B, Nezha D1(Allwinner D1 SoC).
    - **ARM**: Raspberry PI, Exynos-based. Custom hardware boards
- **Embedded Linux**: Yocto Project, OpenWrt, U-Boot, SWUpdate, etc...
- **Virtualization**: QEMU (virtme-ng, fireckracker), KVM, Virtualbox, Vmware Workstation, Docker, Intel® Simics®

- **Linux userspace**: Shell scripts, Python, POSIX
- **Languages**: C(Clang and GCC compilers), ASM(RISC-V, x86, PIC-family), Python
- **Version contrlol**: Git, Mercurial, Perforce, Svn
- **AI tools**: ChatGPT, Gemini, Claude AI, DALL E, MidJourney

Work Experience

Intel **Gdansk, Poland**
Senior Linux Kernel Developer *June 2022 - Present*

For more than 50 years, Intel and our people have had a profound influence on the world, driving business and society forward by creating radical innovation that revolutionizes the way we live.

Project: Enabling next-generation Intel® Xeon® CPU features within the Intel® RDT software stack
Key Contributions:

✓Designed and implemented kernel-level enablement for upcoming Intel® Xeon® CPU RDT hardware blocks, including integration with resctrl and resctrl2 subsystems
✓Participated in Intel's internal RDT architecture workgroup, providing early-stage technical feedback on upcoming specifications; several of my proposals (e.g., for SNC descriptions) were adopted
✓Maintained and extended Intel's open-source RDT utility (intel-cmt-cat), supporting post-silicon validation and early customers adoption
✓Collaborated with architecture, firmware, and performance validation teams to align software behavior with hardware block definitions
✓Worked in virtualized environments (QEMU/KVM, Simics) and real silicon platforms to validate kernel-space and userspace functionality
✓Followed upstream Linux kernel best practices and contributed with a focus on stability, testability, and architectural alignment

Skills & Technologies: C, Linux Kernel Development, Intel® Xeon® RDT, intel-cmt-cat, resctrl / resctrl2, Post-Silicon Validation, Virtualization (QEMU/KVM, Simics), Systems Programming, Git, Bash, Performance Debugging

Intel **Gdansk, Poland**
Linux Driver Developer *October 2021 - June 2022*

For more than 50 years, Intel and our people have had a profound influence on the world, driving business and society forward by creating radical innovation that revolutionizes the way we live.

Project: Development of a custom version of Linux ice driver for smartNICs (Intel E8XX series) and a wide range of pre- and post- production cutting-edge network equipment
Key Contributions:

✓Contributed to feature development and debugging in a custom version of the ice network driver, tailored for internal SmartNIC deployments
✓Implemented VLAN filtering capabilities aligned with advanced switching and packet classification requirements
✓Authored a patch accepted upstream for the Intel® ice driver (VLAN promisc mode fix): https://git.kernel.org/pub/scm/linux/kernel/git/torvalds/linux.git/commit/?id=96e813e34df8b9d7765f42cfaa5466e4
✓Supported bring-up and validation of SmartNIC hardware across multiple firmware and OS layers
✓Worked in virtualization and hardware-in-the-loop setups for low-level driver testing
✓Collaborated cross-functionally with firmware and networking teams under NDA constraints

Skills & Technologies: C (Linux Kernel & Drivers), Network Drivers (ice), Intel® E8XX SmartNIC, VLAN Filtering, Linux Development, Firmware Interfaces, Virtualization, Bash, Git, Systems Programming

Zorachka Inc. **Minsk, Belarus**
Firmware Engineer *Apr 2019 - Sep 2021*

A team of dedicated professionals with a mission to provide the best solution for the smart home.

Project: Developed complete firmware and embedded Linux support for the Homam 64GB smart camera, which included 3 custom PCB designs with distinct peripheral setups.
Key Contributions:

- ✓Developed 3 firmware stacks (9 images total) from scratch, targeting all PCB variants
- ✓Built firmware and Linux-level support for peripherals: camera sensor, microphone (2-way audio), speaker, PIR motion sensor, accelerometer, RGB LED, IR LEDs, and microcontroller subsystems
- ✓Designed a power management system using multi-stage I2C signaling: Linux initiated sleep mode via microcontroller, which then powered down the board and itself, reducing consumption from 1A to microamp levels; system woke on button press
- ✓Created a custom bootloader and I2C-based update protocol; wrote a Python userspace tool for reflashing
- ✓Wrote a Linux GPIO driver from scratch to support LED control via userspace
- ✓Debugged hardware with LEDs, oscilloscopes, and bus analyzers
- ✓Contributed to a Yocto-based Linux OS (Cortex-A9): refactored recipes, created update scripts, and integrated SWUpdate
- ✓Maintained and extended proprietary ASoC audio drivers
- ✓Assisted in Wi-Fi Alliance® certification and Apple HomeKit v3 integration
- ✓Product featured on multiple platforms:

Homam 64GB
Homam 64GB on Amazon
Homam 64GB Smart Camera Overview

Skills & Technologies: C, Linux, Python, Ftrace, Perf, Ebpf, Embedded development tools, ARM-based SOC, Wi-Fi, Bluetooth Low Energy, Custom Hardware, Bus Analyzers, Oscilloscopes, Multimeters

SK Hynix memory solutions Eastern Europe **Minsk, Belarus**
Embedded developer *May 2018 - April 2019*

SK hynix memory solutions Eastern Europe is a leading R&D center for flash firmware and software development

Project: Contributed to experimental features and performance tooling for NAND-based storage products, working across Linux kernel and firmware interfaces.
Key Contributions:

- ✓Participated in a cross-functional research team developing advanced algorithms for NAND-based storage systems; enabled experimentation by modifying Linux kernel drivers and exposing required metadata to firmware
- ✓Enhanced a custom UFS Linux kernel driver to pass high-level filesystem insights to NAND firmware for smarter internal behavior
- ✓Designed and inserted tracepoints into the Linux VFS and block layers, supporting real-time access tracing using ftrace
- ✓Assisted in the creation of a Host Performance Booster–style feature within a custom UFS storage driver
- ✓Developed userspace utilities in C and Python to analyze and visualize performance metrics from various NAND prototypes
- ✓Collaborated with firmware, validation, and performance engineering teams to support architectural evaluations

Skills & Technologies: Linux Kernel Development, Filesystem & Block Layer Instrumentation, Firmware Interfaces, NAND Storage Research, UFS Driver Customization, ftrace, Performance Analysis, Python, Bash, Git, Systems Programming

Self Employed **Taganrog, Russia**
Software Engineer *Dec 2014 - May 2018*

Worked as an independent contractor delivering software solutions for small businesses and early-stage clients. Projects included long-term maintenance, debugging, and implementation of backend features and customer-facing tools.

Key Contributions:

- ✓Delivered stable and reliable code across multiple client projects
- ✓Worked independently to meet client needs on long-term contracts

Skills & Technologies: Software Engineering, Debugging, Python, Client Communication, Feature Design, Maintenance & Support

Education

Taganrog State University Of Radio Engineering **Taganrog, Russia**
Engineering Degree (equivalent to B.S./M.S.) in Computer Science *Sep 1996 - May 2004*
Faculty of Automation and Computer Engineering
Graduate work: Wavelet transforms based images compression codec