Yury Odnokurtsev

Senior Integration Engineer & Software Architect | C/C++ and Linux

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PROFILE

Hands-on software architect and C/C++ engineer with 15+ years of software development experience, including nearly ten years in ADAS R&D at Valeo. Designed and largely independently implemented YODPS framework, transforming ADAS development and integration by replacing a commercial toolchain with a shared, flexible platform, shortening development cycles and saving hundreds of thousands of euros. Experienced in embedded Linux, sensor and vehicle integration, recording/replay and interactive 3D visualization. A practical problem solver who takes ownership from architecture and implementation through integration and debugging to delivery of complete, working systems.

CORE SKILLS

Architecture: distributed processing, modular C++ libraries, reusable APIs, cross-platform integration, messaging, shared memory and multithreading; evaluation, adaptation and integration of open-source components.

Development: C, C++, Bash, Python, Rust, Java (JSP/EJB); Git, CMake, GCC, GDB, Valgrind, strace, cross-compilation; Docker, Buildroot, Android NDK, Emscripten.

Platforms: Linux x64/ARM64, Windows, Android, QNX; NVIDIA AGX / DriveOS, TI TDA4, Raspberry Pi 4, Cortex-M.

ADAS & sensor integration: AEB/ACC and third-party perception integration in test vehicles; multi-sensor acquisition, synchronized recording/replay and diagnostics; CAN/CAN FD odometry, radar, GNSS, Mobileye, GMSL and V4L2 cameras; Valeo ScaLa 1/2, Hesai Pandar64, Velodyne VLP16/VLP32/HDL32/HDL64; OBD2 diagnostics.

Interfaces & messaging: CAN/CAN FD, DBC, Vector XLDriver, SocketCAN, FlexRay, Ethernet, TCP/UDP, UART, SPI, I2C, I2S; ZeroMQ, NNG, MQTT, WebSockets.

Frameworks & data tools: Elektrobit ADTF (DAT), ROS interoperability (rosbag), Foxglove MCAP, Vector CANoe BLF/Binlog, AUTOSAR ARXML; Gazebo, IPG CarMaker; Wireshark, tcpdump, libpcap/libtins (PCAP); NI LabVIEW.

Graphics & media: Qt, Dear ImGui, Ogre3D, Urho3D/rbfx, raylib, Magnum, LVGL, OpenGL/GLES, GLSL; HTML/CSS; FFmpeg, GStreamer, ImageMagick, TurboJPEG, stb; NVENC/NVDEC, H.264, x264.

AI/ML integration: ONNX Runtime, YOLO detection/segmentation, MiDaS relative depth estimation.

Databases & data processing: Oracle PL/SQL, PostgreSQL, MySQL/MariaDB, SQLite; XML, DOM/SAX, XSLT.

Prototyping & hardware integration: 3D design in FreeCAD and Blender; 3D printing; basic machining; KiCad PCB design; soldering, connector crimping, cable routing, sensor installation and hardware assembly; oscilloscope and multimeter diagnostics; troubleshooting, problem solving.

PROFESSIONAL EXPERIENCE

Independent development, YODPS Project | Creator and Lead Developer

December 2024 - present | Bietigheim-Bissingen, Germany

- Independently develop the next generation of YODPS: a modular C++ framework for distributed acquisition, processing, visualization, recording and replay, with interfaces for nodes written in other languages.
- Redesign messaging and shared-memory buffer interfaces, separating application logic from transport backends and platform-specific device access. Develop and evaluate ZeroMQ and NNG transports.
- Build an Ogre3D / Dear ImGui viewer for models, geometry, point clouds, video and diagnostic data, including desktop and Raspberry Pi 4 OpenGL/GLES support.
- Integrate YOLO detection/segmentation and MiDaS relative depth through ONNX Runtime. Profile decoding, conversion, inference and rendering; use shared memory for large image payloads.

Valeo Schalter und Sensoren GmbH | Software Engineer

February 2015 - November 2024 | Bietigheim-Bissingen, Germany

- Designed and largely independently implemented YODPS, replacing Elektrobit ADTF functionality, saving hundreds of thousands of euros and establishing a shared platform across ADAS development and integration projects.
- Delivered a working automated-driving demonstrator built on YODPS, integrating perception with longitudinal and lateral vehicle control, lead-vehicle following and automatic lane changes.

- Enabled reuse of acquisition, processing, recording/replay and visualization components by perception, localization and analysis teams.
- Ported components to Windows, NVIDIA AGX / DriveOS and TI TDA4 / Linux; supported the team porting software to Qualcomm Snapdragon Ride / QNX
- Built measurement configurations with up to 16 GMSL cameras, CAN/CAN FD, radar, GNSS and multiple UDP lidars. Developed capture, conversion and inspection tools for live data and recorded traces.
- Developed Qt/OpenGL and raylib/ImGui viewers for point clouds, lanes, signs, objects and video, including CAN inspection, signal plots, structured data, overlays and remote recording/playback controls.
- Integrated simulation and data-injection workflows using CarMaker and Gazebo. Built ROS interoperability tools, an ADTF-light compatibility layer and an ADTF DAT-to-ROS bag converter.
- Modified first-generation lidar firmware on Renesas R-Car / Green Hills INTEGRITY to stream point clouds over FlexRay; diagnosed a buffer-swap concurrency defect and developed a Qt configuration tool.
- Developed an acquisition setup for raw 12-bit grayscale images from a Mobileye camera using NI PXI, LabVIEW and FPGA hardware, with Qt-based tools for replay, trimming and validation. Improved buffering and timestamp ordering for captured streams.
- Ported the viewer to Android using the NDK and connected it to TI TDA4 over USB OTG/tethering for a motorcycle ARAS demonstrator shown at CES. Ported selected components to WebAssembly with Emscripten, prompting management to pursue a SaaS/PaaS direction.
- Developed an occupancy grid mapping prototype with an Elektrobit ADTF processing filter and a dedicated viewer to visualize free space around the vehicle.
- Generated 3D traffic-sign models and texture mappings from Mobileye classification data using gawk, FreeCAD and Blender, and integrated their dynamic display into the 3D ADAS viewer.
- Automated C++ ADTF filter generation from AUTOSAR ARXML using Python and XSLT.
- Developed DXL scripts to automate requirements-management tasks in IBM DOORS.
- Supported difficult integrations through architecture guidance, implementation scaffolding and developer mentoring.

System Programming Ltd | Senior Developer

May 2013 - January 2015 | St. Petersburg, Russia

Developed spatial design software in C++ and Qt, including geometry processing, visualization, XML serialization and XML Schema validation.

North-West MegaFon | Software Engineer

June 2006 - May 2013 | St. Petersburg, Russia

Developed a subscriber self-service portal, telecom backend systems, and the corporate website and its CMS using Java, JSP, EJB and Oracle PL/SQL on Linux and HP-UX; maintained the supporting service infrastructure.

SELECTED PERSONAL PROJECTS

- STM32 Cortex-M4 Virtual analog synthesizer with an ILI9341 display and LVGL UI; ported to a VSTi plugin;
- Built an audio effects processor and a UART GNSS-to-CAN FD interface on the NXP LPC1768 Cortex-M3.
- Linux Qt OBD2 diagnostics app;
- MIDI/SysEx tools with XML device descriptions.
- Built audio, MIDI and video workflows using ALSA, FFADO, JACK, PulseAudio, OBS Studio, Ardour and Kdenlive.
- Built tube amplifiers, guitar effects pedals and a replica of Mick Mars’s mirrored Telecaster.

EDUCATION

Master’s Degree in CAD Systems, Systems Engineer
St. Petersburg State Institute of Technology (Technical University)

LANGUAGES

English: fluent · German: basic · Russian: native

ADDITIONAL INFORMATION

Permanent residence in Germany · Driving licence category B · PADI Open Water Diver certification