Sergey Bashkirov

1020 3rd street – 94945 Novato California – USA

+1 (415) 246 0343 • bashkirov.sergey@gmail.com • sergey_831 • github.com/z80
linkedin.com/in/sergey-bashkirov

Summary

Application software engineer with R&D experience in software and firmware development for scientific devices with active open source community participation; experienced in GUI design, hardware to computer communication, firmware, RTOS, real time applications, motors control, pneumatics regulation, Atomic Force Microscopy, semiconductor Kelvin probe analysis, Raman TERS imaging, electrochemistry, BLDC, stepper motors, piezoceramics, actuators control; have experience in algorithms design, data acquisition and processing, computer vision, machine learning; rapid prorotyping and electrical debugging; good project management abilities, problem solving R&D experience.

Areas of expertise

Crossplatform programming: GUI, hardware communication

Firmware design: Real time firmware, actuators control, physical properties measurement, RTOS and bare metal firmware

Visualization: Widgets design, Spatial, 3D geometry, 2D/3D visualization

RPC design: Sockets, XMPP, ICE, XMLRPC

Scripting and automation: Scripting languages, embedded scripting, bare metal firmware scripting

Math: Computer vision, machine learning, statistics, data, image processing

Personal achievements

- Created from scratch software for controlling Atomic Force Microscope.
- Reduced AFM modes development time and eased prototyping by implementing scriptable GUI builder and hardware embedded real time scripting language.
- Reduced hardware design time by making expandable stackable PCB solutions consisting of identical PCBs. Made it for pheumatics control and stepper motors control.
- Simplified "find the same place" task for AFM after sample reinstallation by making video aligning and navigation by video mode.
- Reorganaized production and supplies purchase processes by perforing statistical predictive contracts analysis. Made business control software for warehouse keeping, product assembling, purchasing and contracts tracking.
- Achieved high precision with equipment made of low cost components by applying machine learning techniques to calibration process.

Technical proficiencies

Programming: C, C++, Java, microcontroller assembler

Platforms: Linux, Windows, ChibiOs, FreeRTOS

Frameworks: Qt, Boost, Swing, WxWidgets

Devices: Avr8, Cortex-M, NXP ARM7TDMI, AD Shark DSP, Altera FPGA/CPLD

Scripting: Lua, Ruby, Python, R, SQL, Shell scripting

Web technologies: Ruby-on-rails4, Javascript, Bootstrap

Various: FTDI/CPLD Verilog simulation, PCB design, electrical debugging, soldering skill

Aplications: Stepper, BLDC, DC motors control; piezoceramics, temperature, humidity control, data acquisition, signal processing, filtering, automation

Most recent work experience

Aist-NT Inc. **Novato, CA**
Software Engineer
AFM software development, firmware development, image processing, AFM modes design, AFM-Raman coupling, actuators control, data acquisition and processing, production control

Transmag **Santa Rosa, CA**
Contractor
USB based BLDC motor controller's interface development. Designed firmware, user interface, suggested proper USB schematics.

Education

Moscow Institute of Physics and Technology **Moscow, Russia**
Master of Science in Applied Mathematics and Physics

- **Most recent courses taken:** Circuits & Electronics, Machine learning, SAAS, Kalman filtering, Autonomous navigation, Statistics with R, Node.JS, Angular.JS, Booststrap, JavaScript.

Open source projects participation

grambo-pi.com: Created expandable stackable PCBs set for RaspberryPi computer for robot prototyping.

xonotic.org: Created Blend2map Blender3D to MAP exporter.

chibios.org: Submitted I2C slave mode driver, IWDG driver.

QtLua: Provided a patch making Object::connect() work in the same way as in Qt.

Gaw: Provided a patch fixing crashes with default configuration file for gaw waveform viewer.