

Sergey Bashkirov

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Summary

Application software engineer with R&D experience in software and firmware development for scientific devices with active open source community participation is seeking for a full time position in application development. Experienced in Atomic Force Microscopy, semiconductor Kelvin probe analysis, Raman TERS imaging, electrochemistry, actuators control. I enjoy prototyping and problem solving process, adhere DP principle: don't choose one guess - try them all.

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, Kalman filtering, 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 pneumatics 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.
- Reorganized production and supplies purchase processes by performing 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

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

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

Various: FTDI/CPLD Verilog programming, simulation, PCB design, Spice simulation, hardware debugging, mature soldering skill

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

- Circuits & Electronics, Machine learning, SAAS, Autonomous navigation, Statistics with R, Node.JS, Angular.JS, Bootstrap, 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.