Sergey Bashkirov

Novato California – 94945 – USA

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

Summary

Firmware/Embedded Software Engineer with 12+ years of professional experience in firmware and software in areas related to RTOS, bare metal, Linux, hardware interfaces, drivers, USB, networking; worked closely on actuators control, signal acquisition and processing, user interface design, robotics; machine learning; electrical engineering, have ability to read and design electronic schematics; background in math and physics.

Areas of expertise

Firmware design: Embedded systems, signals acquisition, sensors, real-time programming in RTOS (real time operating systems) and bare metal firmware, embedded Linux

Crossplatform programming: GUI, hardware communication, C, C++, familiar with Java and C#.

Embedded: Digital communication protocols such as SPI, I2C, TWI, USART, familarity with FPGA design

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

Electrical engineering: PCB design, digital and analog circuits, signal filtering

Math: Computer vision, machine learning, statistics, data, image processing, Kalman / Extended Kalman filter

Most recent professional achievements

- Submitted I2C Slave mode ChibiOs driver and IWDG driver.
- Reduced development time and eased prototyping by implementing hardware embedded real time scripting language and scriptable GUI builder.
  Designed firmware, GUI and schematics for scalable USB powered control module for Raman scattering laser radiation acquisition device.
- Achieved high precision with equipment made of the lowest cost components by applying machine learning techniques to calibration process.
- Reduced hardware design time by making expandable PCB solutions consisting of identical PCBs with identical firmware.
- Reorganized production and supplies purchase processes by performing statistical predictive contracts analysis. Made WEB server based business control software for warehouse keeping, product assembling, purchasing and contracts tracking.

Most recent work experience

Aist-NT Inc. **Novato, CA**
Software Engineer, April 2007 - present
Designed firmware for all hardware solutions, created embedded real-time scripting language, designed AFM software, integrated a number of 3rd party devices

Transmag **Santa Rosa, CA**
Contract, USB interface design, August 2013 - December 2013
Designed USB based BLDC motor controller's interface. Designed firmware, user interface, suggested proper USB schematics.

IPM RAS **Moscow, Russia**
Contract, remote position, pneumatic mechanism control module, April 2012 - February 2015
Created firmware, software and schematics for pneumatic robot control modules, developed scriptable SDK, programmed movement algorithms.

Education

Moscow Institute of Physics and Technology **Moscow, Russia**
Master of Science in Applied Mathematics and Physics, February 2004

Moscow Institute for Problems in Mechanics **Moscow, Russia**
Courses in robotics, control theory and stability, June 2004
Laboratory of Robotics and mechatronics.

Detailed technical proficiencies

Platforms: Embedded systems, Linux OS, Windows OS, ChibiOs, FreeRTOS, familiarity with Buildroot, Raspbian, OpenWRT, Android

Programming: C, C++, Java, microcontroller assembly language, Debug skills

Devices: NXP ARM ARM7TDMI, Atmel AVR , STM32 ARM Cortex-M, AD Shark DSP, Altera FPGA design in Verilog and debuging with testbench, familiarity with Microchip PIC

Interfaces: USB, Ethernet, TCP/IP, UDP, I2C, TWI, SMBus, SPI, UART, PWM, DAC, ADC, JTAG debugging

Scripting: Lua, Ruby, Python, R, MATLAB/Octave, SQL, Shell scripting, Pawn, java script, ajax, html, bootstrap, ruby-on-rails

Aplications: data acquisition, signal processing, FIR/IIR filtering, Kalman filtering, automation, drivers design

Frameworks: Qt, Boost, OpenCV, VTK, CMake, Qt Unit Test Framework

Software, tools: Git, Subversion, Eclipse, VisualDSP, VisualStudio, GitHub, SourceForge, Understanding firmware development lifecycle, familiarity with Keil SDK, IAR, MPLab

Electrical: PCB design, electrical engineering and debugging, soldering skill, knowledge of Oscilloscopes, multimeters digital meters, logic analyzers, frequency analyzers, signal generators, Board level bring up experience
KiCAD, Eagle, NGSpice, familiarity with Altium, OrCAD, LTSpice