

Rob Dunford (BEng Hons)

54 Winslade Road Sidmouth Devon EX10 9EX

Embedded Software Engineer

Email: rjdunford@gmail.com; Mobile: 07539 329396

Technical Summary

- Microcontrollers: Strong C Firmware background using STM32, PIC, and MSP430 processors.
- Hardware & Debugging: Experienced in debugging firmware and electronics using signal analysers, oscilloscopes, and debugging tools.
- IDEs & Tools: Very familiar with STM32CubeIDE, STM32CubeMX, MPLAB X, Code Composer Studio, STM32CubeIDE, and IAR Embedded Workbench.
- Protocols: Strong understanding and application of industry protocols including SPI, I2C, RS232, UART, BLE, and CAN bus.
- Architecture: Designed and written firmware applications with bare-metal (round-robin) architectures and operating systems.
- Tooling: Developed test and configuration applications using C#.
- Version Control: Experienced with Git (GitHub, Bitbucket, Bash, Sourcetree) and Perforce source control systems.
- Methodologies: Familiar with Test Driven Development (TDD) and Agile workflows using Jira and MS Teams.
- Systems: Proficient in Windows environments; familiar with Linux and virtual machines.

Education

- B.Eng (Hons) Electronic Engineering from the University of Plymouth

Personal Overview

I find solving problems with code very rewarding, creating clean, robust, and simple solutions wherever possible. I am driven by technical challenges and the pursuit of excellent customer-centered solutions, with a proven ability to perform effectively both individually and within multidisciplinary teams.

Work History

Oct 2024 - Present: Sidmouth Tech - Contract Embedded Software Engineer.

Nutissu – Contract Embedded Software Engineer (NDA Protected)

- Designed and implemented STM32-based firmware, integrating I2C-controlled digital potentiometers, heart rate monitoring, and multiplexed temperature sensors.
- Developed custom UART and BLE communication protocols to transmit real-time sensor data seamlessly to the nRF Connect application.
- Configured DAC channels to precisely drive external analog measurement circuitry.
- Built a custom C# desktop tool for UART data transmission and reception, significantly streamlining the debugging and testing workflow.
- Board bring-up and hardware fault diagnosis during early-stage development.

Surrey Space Centre – Contract Embedded Software Engineer

- Designed and implemented a CAN bus protocol for the Jovian Satellite project using C and C++ across Linux and Arduino platforms.
- Integrated the CAN protocol into various satellite subsystems and modules.

2022- July 2024: Numatic International - Embedded team Lead

- Developed C code for a control board with Linear actuators, rotary encoders, LEDs, temperature sensors, RS422 link to a motor controller and CAN bus link to a Lithium battery.
- Developed C code to collect distance data from Ultrasonic sensors to be used in Numatics Robot Cleaner (DsPIC32/STM32).
- Developed C code for a power assist BLDC controller to improve the manoeuvrability of a scrubbing floor cleaner (PIC16F).

Rob Dunford (BEng Hons)

- Managed a team of full-time and contract staff to support firmware development.
- Defined S.M.A.R.T. Goals for the team where possible (Specific, Measurable, Achievable, Relevant & Timebound)
- Created a firmware development process and coding standard to guide the development of projects by the team.
- Remained hands-on where possible, assisting the team in designing and writing code for the company's Autonomous product.
- Undertook and passed IEC-61508 training qualifying for the title of "Functional Safety Engineer" (FSEng).
- Completed the Management Development Programme from Level Up South West (Ltd).

2015 - 2022: Numatic International – Senior Embedded Software Engineer

- Developed C code for a closed loop BLDC controller (PIC) (200K+Units PA)
- Developed C code for a Lithium Battery powered Vacuum cleaner (PIC16F)(12K+Units PA)
- Hardware fault finding and new board bring up.
- Developed C code for a Vacuum controller with AUX power output and low flow detection via a pressure sensor (STM32)(10K+Units PA)
- Developed C code for a Battery test rig that controlled the charging and discharging of batteries and stored the results over thousands of cycles and many months (PIC16F),
- Developed C code for a range of ride-on scrubber driers (PIC16F).
- Developed simple round-robin code in the form of several libraries. These libraries were inserted into projects as GIT Submodules and used throughout Numatics products.
- Developed C code for end-of-line test systems.
- Developed product configuration applications in C#
- Developed an end-of-line test/configuration app for our domestic battery Henry product in C#
- Managed daily workloads for a Firmware engineer.

2010 - 2015: RightCode - Contract Embedded Software Engineer.

Worked with Ashwoods Energy to develop their battery management system. The BMS board was pic based and used CAN bus to link a vehicle controller to battery management and current detection boards.

1999 – 2015: Stanley Security Solutions Innovations- Embedded Software Engineer

Worked as part of a geographically split hardware team (Paisley, Stockport and Exeter) as a firmware engineer. Microsoft TFS was used to break projects down into tasks and manage coding sprints.

All firmware written from 2009 used our proprietary embedded OS and was written in C.

Some examples of the projects that I was involved in are:

- A proof of concept Smart card reader/writer for a simple access control system.
- A control panel for a 2-door access control system.
- Peripheral drivers for our proprietary embedded OS.
- Staff protection and paging systems that were used in hospitals and secure environments. The technologies used were narrow-band radio and DECT.

1998 to 1999 Racal Defense Electronics - Intermediate Engineer

Developed low-level drivers in C and designed and built a test rig for an early mesh radio system.

1994 to 1997 Nortel Networks- Test Methods Engineer.

Assisted in creating a test platform in VB6 that could control test equipment. Used this test platform to create tests for several complex microwave link systems.