

Stephen Armstrong

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- Multidisciplinary embedded software engineer. Flexible, pragmatic and experienced, with a methodical approach to architecting, designing and implementing solutions.
 - Wide experience across a range of platforms, peripherals, communications standards and programming languages.
 - An enthusiastic individual who works well in a team and is self motivated when working alone.
 - Experience of line management and managing development teams across multiple concurrent projects.
 - Fast learner and proficient problem locator and solver.
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Employment

Feb 2018 - Present Megger Instruments Limited, Dover, Head of Firmware

I started my time at Megger Instruments as a Senior Firmware Engineer and was promoted to Head of Firmware within six months.

- Leadership and supervision of Firmware Engineering team made up of 10 members developing firmware.
- Design and development of software, working with other engineering disciplines within the engineering department of an electrical test equipment device manufacturing company.
- Key responsibilities included:
 - Management and allocation of Firmware Engineering resources to support business needs, for both New Product Development (NPD) projects and Product Support activities.
 - Lead the architecture, design, implementation and test of the firmware for electrical test equipment.
 - Driving consistency in the technical approach adopted across all projects, to support NPD development and corporate business strategies.
 - Push implementation and introduction of new technology and innovation in product design and architecture.
 - Working with product managers, project managers, heads of other engineering disciplines and members of the Megger Instruments board to deliver the required products from engineering into production
- Personal Achievements:
 - Introduction of Model Based Development using Simulink and code generation.
 - Improve the speed of development
 - Improvement of testing of sub-systems before integration.
 - Encourage modularisation of designs.
 - Key member of the team introducing new UI and GUI technology across new developments. The new UI technology replaces existing custom LCD displays with

TFT displays, and engaging with external partners providing a GUI framework and UX design services.

- Improve the design process including encouraging more formal documentation and process in the design process for firmware and software.
- Introduction of JIRA for issue and task tracking.
- Projects include:
 - Earth tester: regression testing and bug fixing of an earth tester instrument before release to production including improving the regression testing process and management of the testing.
 - Hand held motor tester: Testing and bug-fixing of measurement firmware. Supporting of the switch from internally developed UI to one developed with external partners using their framework. Challenges involved transfer of the design to external team and documentation of the existing interface. Ultimately the instrument was released with a fast, responsive, modern user interface.
 - Multi-functional tester for testing low voltage electrical installations: requirements capture, architecting, design and implementation of firmware. Instrument firmware split into measurement firmware on one processor using Model Based Design approach with Simulink, and User Interface firmware on another processor, working with external design partners. In addition to performing design and implementation for the measurement firmware, I took the lead in architecting the inter-processor communication, building on the experience of the hand held motor tester. I also architected the measurement API for use by the external UI developers to minimise integration issues later in the project, including introducing a measurement simulator for use by the UI developers before the measurement firmware and hardware is available.
 - Low resistance meter: Supporting the development team, specifically with the design of interprocessor communications, and interactions with external UI partners.

Jan 2006 - Aug 2015

Jan 2017 - Feb 2018 Cambridge Consultants, Cambridge, Principal Engineer

- Development of embedded real-time software for wireless and telecommunications products within the wireless division of a world-class technology consultancy and design services company.
- Work primarily involved physical and lower stack level development across many standards, but also experienced in user-interface and hardware design, Matlab modelling and Windows programming.
- Projects include:
 - Re-architecting, optimisation and testing of physical layer implementation of a ground based modem for use with a satellite telephony system.
 - Design, implementation, optimisation and testing of novel audio echo cancellation algorithm on a wireless headset platform to enable a useable peer to peer intercom feature.
 - Architecting, design, implementation and testing of LTE basestation physical layer. Work involved leading a team of developers, ownership of the controllers and API for communication to higher layers and implementation of core elements of the physical layer.

- Implementations and testing of improvements and modifications to a CDMA reference physical layer and stack. Work included design and implementation of a TCP/IP based API as a replacement and enhancement to the existing CLI, extending the supported feature set to provide the customer with a more flexibility, and thorough testing throughout the project.
- Testing of an algorithm for detecting correct usage of a dry powder inhaler using audio, and architecting, designing and implementation of software for Device Verification Testing (DVT). Work involved taking over ownership of the design and implementation of the algorithm and conducting empirical testing to characterising its performance. The software for the DVT included control of semi-automated testing stations and wireless basestations, electronic tracking of units under test, software to allow users to independently verify algorithm performance, a centralised database to track the tests and maintain the results of the DVT and design of an IP based protocol for communication between all of the elements.
- Implementation and of a GSM basestation physical layer for demonstrations and subsequent development for licensing to customers. Work involved optimisation and refactoring of existing code to reduce resource usage, increase performance, and improve the quality to that expected by customers. Additional work included design and implementation of a downlink scanner and adding support for different radio hardware platforms configured using SPI.
- Design, development and test of multiple parts of a broadband satellite terminal. Work involved evaluation of hardware components and implementation of drivers for hardware interfaces (E1, Ethernet, POTS, SIM, RS-232 UART, flash) working with the hardware designers, design and implementation of in-service upgrade software, and design and implementation of Real-time Transport Protocol service to tunnel VoIP over the satellite network.
- Evaluation of new audio codecs for use on a satellite telephony networks. Work involved implementing a test harness that simulated realistic channel conditions and measured the resulting degradation in voice quality across the candidate codecs.
- Development and testing of a test modem for a new fleet of telecommunication satellites. Work involved leading a core team developing the software to prove the design and operation of the new satellites, implementing features including drivers, and driving integration and testing on an immature hardware platform.
- Design and implementation of software to track telecommunication satellites and test a new service they were providing. Work involved implementation of control software for an embedded receiver, design of the API to interface between the receiver and a Windows application, and implementation of the API in the receiver and the applications.
- Design and implementation of software to provide time synchronization based on telecommunication satellites as a backup to GPS. Work involved clarifying and simplifying the design, writing software to interface to physical layer and hardware being developed by other team members.
- Design, implementation and testing of GPS receiver software as an additional mode to a satellite data modem. Work involved writing of a reference GPS receiver and integrating acceleration functions performed by signal processing cores into the receiver to improve performance.
- Design, implementation and testing of 3GPP basestation physical layer and lower MAC. Work involved design and implementation of parts of the transmitter and receiver.

- Implementation and testing of Wimax basestation and user equipment physical layers on a highly parallel platform. Work involved implementation of parts of the transmit and receive chains and base station detection and synchronising algorithms for the UE.

Aug 2015 - Jan 2017 Integrated Technologies Limited, Ashford, Senior Hardware Engineer

- Development of hardware and software, working with other engineering disciplines within the research and development department of a medical product design and medical device manufacturing company.
- Key responsibilities included hardware design, schematic capture, PCB layout, software and firmware development and production support.
- Projects include:
 - Hardware and software design and development of an embedded console for reception and recording of video from an inspection system.
 - Development of a novel bone conducting hearing aid.
 - Embedded Firmware development for in vitro laboratory instrument for fast detection of infection. Involved driving stepper motors, reading sensors, controlling temperature and user interface..
 - Study of a client's existing software development documentation and extensive rework for IEC 62304 compliance.
 - Investigation of several problems in production of an instrument, which lead to identification of several areas of the design that could be improved. Implementation of these improvements lead to higher production yield and better performance of the instrument.
 - Management of the characterisation and reconditioning of battery stock to improve the performance of a client's stock of mobile medical pumps.

Sep 2002 - Dec 2005 Telsis, Fareham, Senior engineer

- Real time embedded and application software programming for Intelligent SMS routing and voice call switching.
- Hardware and firmware design and implementation using schematic capture tools, PCB layout CAD tools, and VHDL.
- PC application programming.
- Projects include signalling scheme implementation, voice and text service implementation and PC based configuration tools.

Jul 2002 – Sep 2002 Noise Cancellation Technologies, Cambridge

- Vacation Work with noise cancellation techniques and flat panel speakers, including measuring, testing, software and DSP programming.

Aug 1997 – Sep 2000 Nortel Networks, Harlow

- 13 months on Year in Industry scheme before University.
 - Sponsored for 3 years of university course including working in the summer.
 - Worked as part of a team developing prototype ADSL modems including simulation of RF interference, building demonstration systems and creating VHDL based interface hardware.
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Education

Oct 1998 – Jun 2002 MEng Electrical and Information Science

Queens' College, Cambridge

1st year 2.1, 2nd year 1st, 3rd year 2.1, 4th year Merit

- Final year individual project – 3D Surface rendering from Ultrasound.
- Third year group project – Design and build autonomous vehicle.
- Subjects studied include: Signal Processing (Analog and Digital), Telecommunications (including RF and Data Transmission), Robotics, Computer Vision and Computer Graphics, VLSI, System and Control, Software Engineering and other more general engineering areas (including Mechanics, Structures, Materials, Thermo-dynamics, Fluid Mechanics, Mathematics and Business Economics).

Sep 1995 – Jul 1997 Northgate Sixth Form, Ipswich

- A levels: Mathematics, A; Further Mathematics, A; Physics, A; Computer Science, A.
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Skills

- Programming in many languages including C, C++, C#, Matlab, Simulink, Python, .NET, Visual Studio, SQL, VHDL, HTML, CSS, JavaScript.
 - Programming in assembly languages including TI, x86, 68k and several proprietary assembly languages.
 - Operating systems: embedded Linux, FreeRTOS, VxWorks, Nucleus, Windows, Custom, Bare Metal.
 - Platforms: STM32, TI, ARM, PIC, x86, 68k, Mindspeed/Picochip, Octasic, Proprietary ASICs (including cross compilers).
 - Wide experience of finding and fixing bugs including use of in circuit emulation, diagnostic tools and test equipment.
 - Source control systems: Tortoise SVN, command line Subversion, Tortoise GIT, command line GIT.
 - Experience of hardware design including analog and digital, schematic capture and PCB layout.
 - Experience in leading project teams, full product lifecycle, defining system architecture, detailed design, implementation and testing.
 - Line management experience.
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References available upon request