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Software Engineer
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< Introduction >

Help companies to design and architecture of reliable, scalable and reusable system and applications. I have more than 13 years of industrial software development experience in embedded real time systems using C/C++ with RTOS or Linux. I have worked in different sectors (Data Storage, Railway, Security, Oil & Gas, IoT). My role normally encompasses the entire project life-cycle, from specification to maintenance phase. Most systems I have worked on have required high speed and deterministic performance, often within a highly constrained platform. I have particular experience in IEC 61508 design include railway systems (brake control systems and railway signaling), airport security systems, safety motion control system, wireless data communication system and low power oil and gas well monitoring system.

Specialties:
- Real time C/C++ (distributed / embedded / real-time systems)
- Cloud Technology: Azure IoT Hub, IoT Edge, IoT Central
- Bare metal platform, Multicore and Multi-threading OS solutions.
- Device driver development. (Internal hardware drivers, external hardware interfaces)
- Communication protocol stacks development (Standard and custom protocols over UART, HDLC, TCP, UDP, CAN)
- Library/Framework development
- Experience in C# .NET, Matlab, Simulink, Python, PLC.
- Experience in low power design for battery applications.
- Experience in both system and software architecture design and modelling via UML.
- Experience in design modular and reusable platforms for multiple product lines.
- Experience with multiple Agile projects and industries; can work under pressure in fast-paced environment to tight deadlines.
- Presented and demonstrated new features to clients at end of Agile sprints.
- Mentored junior developers and new starters.

< Employment >

Contract Software Engineer (C++) ,   **July 2018 – Jan.2020**
Schlumberger, UK
- Participated in the development of software for drilling and measurement tools in C++, the applications are multithreaded, using the ThreadX RTOS on ARM7 core. Used Confluence, Enterprise Architect, Azure DevOps, Git.
- Create software architecture (UML) and implemented hardware abstraction layer and general-purpose application frameworks for the next generation scalable modular processor platform.

Contract Software Engineer (C++) ,   **Jun. 2018 – Jun.2019**
Expro, UK
- Part of a team (10+ software engineers) working on new platform development (distributed design) for oil and gas wireless downhole well monitoring devices.
- My roles involve full OSI network stack development (included layer 1 and layer 2 solution for long range and short range wireless acoustic communications), router, network adapter, device drivers and low power communication protocol design. The system has been designed and modelled via UML "4+1" view model. Full Agile development following by MISRA C++ coding standard.
- Experience on battery management and low power design on STM32 ARM architecture.
- Participating in daily code reviews and suggesting improvements to automate test framework (both unit test and system test) and authoring tasks/stories etc.

Contract Lead Software Designer,   **Aug. 2017 – May 2018**
Atkins, UK

- Developing software solution for next generation of railway signaling system (e.g interlocking and level crossing). The aim is to replace the old relay and mechanical based systems into more advance PLC electronic control system (SIL4 and EN50128).
- A role involves producing design artefacts in the form of user case, class diagram, component diagram, deployment diagram and behavioral diagram in UML via enterprise architect. The software design has been started from stretch using object-oriented concept and SOLID design principles, the aim is scale applications software from a tightly integrated system to be more modular and reusable. As lead designer, my role also includes formation and definition of processes within the design team including software development life cycle (design plan, architecture design, SW design and integration, support V&V etc), contributed design standard/coding style guides, configuration management and requirement traceability report etc.
- Exposure and hands on experience on MATLAB Simulink tools for modeling and simulation. Developing PLCs (Programmable Logic Controller) using ladder logic.

Lead Software Engineer,   **Oct. 2016 – Aug. 2017**
Gunnebo Entrance Control, UK

- Design and develop application software on new electronic control platform for next generation of entrance gate control and drive. Created highly configurable modular design of hardware and software (object-oriented design) that allow common performance and functionality across all products range. The new automatic immigration gate has been developed using this platform, this product is successfully completed for Lyon and Marseille airport with a contract value of £2M.
- Responsible for all aspects of software development including recruitment, line management, design, technology selection, project planning, formal liaison with other R&D, Regulatory, QA, Marketing, Sales and Manufacturing departments. Reporting to the Operations Director.
- Feasibility and design of the embedded software (ARM Cortex-M4 architecture), state-of-the-art GUI and windows DLL development (C#).
- Design and developed a novel single person tracking and detection algorithm (via various sensors and camera technology) to archive 95% of success rate; Developed collision detection motion control algorithm for brushless DC motor (BLDC) to reduce the overall maximum impact force to human.

Senior Software Engineer,   **Aug. 2011 – Oct. 2016**
Knorr-Bremse Rail Systems (UK) Ltd, UK

- Developed real-time embedded software for next generation of advanced distributed train brake control systems (Operating in V-Model, Agile methodology). This product has a highly safety integrity level SIL 2, development following MISRA C standard and EN50128. This is a five years R&D project, created highly configurable modular hardware and software control platform from initial concept stage through to product launch.
- Full life cycle of product development from requirements analysis, architecture specification, design and development of brake control system and diagnostic functions.
- Global design and development of product (collaboration with team in UK, Germany, Hungary, India): developed both software and hardware of BCU (brake control unit) to control brake pressure as well as monitoring system. Write specification and definition of the functional architecture (similar to AUTOSAR basic software modules). Development of embedded real-time multitasking system on Infineon Aurix 32 bits multi core processors.
- Development of low level drivers to handle CAN and serial communication as well as manager digital and analog inputs/outputs. Development of a brake control management library suited to the needs. Design and developed communications and network protocols/interface (via CAN, SPI, TCP/IP etc) used UML via enterprise architect.

- Developed tools (.NET C++) to configure the train, diagnose and monitor of the entire system. Design and development of both CAN and Ethernet management library, development of an HMI to setup the bogies, retrieve event logs, display system status information and real-time traffic.
- Managed resource and participate project planning, monitor workflow and make timeline adjustments as needed. Collaborate with multi-national development team to plan project sprints, implement and maintain development best practices.

Contract Software Engineer,   **April 2008 – July 2011**
Hewlett Packard, UK
- Developed PC based software application for enterprise data storage solutions. Software development and maintenance of in house, cross company, multi-national, industry standard tool suite for SCSI, ACI, ADI and iADI communications protocols. Firmware verification for HP high speed (T10) tape storage product.
- Implemented online system for test tracking and reporting that provided sharing of test plans/result among team members, reducing testing cycle duration, decreasing testing platform duplication, and improving tracking of test areas of proven trouble spots.
- Primary technologies include C++, MFC, C, Perl, Python, PHP, XML and Eclipse.

< Education >
PhD in Electronic Engineering,   **Oct. 2004 – Jan. 2008**
Cardiff University, UK
The aim of this project is to design novel low complexity algorithms for recovering the underlying sources from their convolutive mixtures, and removing the crosstalk and canceling the interferences from other communication channels. Most of my work has been concentrated on the modeling and estimation of the downlink and uplink multi-path channels in the physical layer. I have developed several effective algorithms using optimization techniques and statistical properties of signals, and demonstrated successfully using MATLAB and C++. I am an expert of communications system and algorithm development, I have deep knowledge with various modulation and coding schemes, familiar with OFDM, MIMO, turbo coding.

BEng (Hons) 2:1 in Electronic Engineering,   **Sept. 2001 – June 2004**
University of Central Lancashire, UK
Core subjects included Electronics, Digital system, Signal analysis and processing, Data communication, Program design and implementation, Artificial neural network, Project Management etc.

Technologies & Tools:
- Processor: ARM Cortex-M4, M7, STM32, Infineon Aurix TC29x & Tricore TC1796, XE167.
- Real-time Systems: CMX, SCIOPTA, FREERTOS, EMBOS
- Device driver: ADC, DMA, I2C, UART, CAN, Ethernet, NAND/NOR Flash, MMC/SD Card.
- Communication bus: CAN, LIN, Ethernet, RS485, RS232
- Development Tools: Eclipse(Tasking), Visual Studio 2012, Keil uvision, Make
- Software configuration: SVN, MKS, GIT
- Requirements traceability: DOORS, MKS, Enterprise Architect
- Bugs management: JIRA
- UML Design: Enterprise Architect
- Static Code Analysis: Understand, PC-lint
- Development methodology: V-Model, agile (scrum), test-driven, SOLID design principles.
- Diagnostic: VECTOR, CAN CANalyser, CANoe, Wireshark, Oscilloscope

REFERENCES: (Additional referee details available upon request)