Edward McLaughlin

Senior Embedded Systems Engineer

M.I.E.T. · MBCS

PROFESSIONAL PROFILE

Senior Embedded Systems Engineer with over 25 years of experience spanning medical devices, industrial control, cybersecurity, automotive, and IoT/wireless products. Extensive hands-on expertise across the full embedded stack — from bare-metal firmware and RTOS kernel bring-up through to device driver development, secure boot implementation, and Linux BSP customisation. Proven track record delivering robust, production-ready embedded software on ARM Cortex, NXP, STM32, and TI platforms under Agile methodologies. Available for contract engagements.

CORE COMPETENCIES

RTOS & OS	FreeRTOS, ThreadX, Zephyr, Embedded Linux, Yocto, OpenWRT, OpenSTLinux
Languages	Embedded C, C++, Python, Win32, Bash
Processors	ARM Cortex-M/A, NXP iMX/RT, STM32, STM32MP15x, Nordic nRF, TI, Renesas, PIC
Protocols	UART, SPI, I2C, CAN, LIN, Modbus, BLE, USB, Ethernet
Security	Secure boot, RSA/ECC, mbedTLS, OpenSSL, X.509, FMEA, threat modelling
Tools	VS Code, Eclipse, IAR, Keil, CMake, Git, Jenkins, JIRA, Agile/Scrum
Standards	IEC 62304 (medical device software), Google Test

EMPLOYMENT HISTORY

Senior Firmware Engineer · Epredia · Contract
Sep 2025 – Feb 2026

Bug fixing and software hardening for a medical instrument based on an NXP processor running FreeRTOS. Scope covered both the embedded firmware and the Windows-based GUI front-end, ensuring product robustness ahead of regulatory submission.

Embedded C/C++ · FreeRTOS · NXP · UART/GPIO/I2C/SPI · Win32 · CMake · VS Code · Agile/JIRA/GitLab

Firmware Engineer · Qualitrol · Contract
Jul 2024 – Jan 2025

Ported a legacy C microcontroller platform to an embedded Linux C++ solution for a transformer temperature-monitoring datalogger and industrial control product. Responsible for driver development, Yocto layer integration, and validation using Google Test.

Embedded C/C++ · ThreadX · Embedded Linux · Yocto · Modbus · UART/GPIO/I2C/SPI · CMake · Google Test

Principal Firmware Engineer · Angoka Ltd. · Contract
Apr 2023 – Apr 2024

Led MPU selection and board bring-up for a dual-core A7/M4 STM32MP15x SoC running OpenSTLinux and Yocto. Authored Linux kernel drivers and implemented test routines for all on-board peripherals including 5G modem, Ethernet switch, eMMC, U-Boot, TF-A, Wi-Fi, Bluetooth, and standard serial interfaces.

Embedded C · Yocto · Kernel driver development · STM32MP15x · 5G/Ethernet/BT/Wi-Fi · U-Boot · CMake

Firmware Engineer — Hardware Functional Verification · Nordic Semiconductor · Contract
May 2022 – Mar 2023

Second engagement with the HFV team. Created, modified, and repaired test cases for new single- and multi-core semiconductor devices across a range of peripheral interfaces, working within Agile sprints tracked via JIRA and automated through Jenkins CI.

Embedded C · Embedded Linux · Zephyr RTOS · BLE/SPI/UART/QDEC · Git · Agile/JIRA/Jenkins

Firmware Engineer · Angoka Ltd. · Contract
Feb 2022 – Apr 2022

Designed and functionally tested UART and SPI libraries for a cryptographic microcontroller, ensuring correct protocol behaviour and security boundary integrity.

Embedded C · UART/SPI · Eclipse · VS Code · Git · Agile

Firmware Engineer — Hardware Functional Verification · Nordic Semiconductor · Contract
Jan 2021 – Jan 2022

Embedded in the Hardware Functional Verification team, creating and maintaining test cases for new Nordic semiconductor devices across single- and multi-core configurations with Linux-based toolchains and Agile processes.

Embedded C · Embedded Linux · BLE/SPI/UART/QDEC · Ubuntu · Git · Agile/JIRA/Jenkins

Firmware Engineer · Gamgee NL · Contract
Sep 2020 – Nov 2020

Ported Realtek drivers using the vendor SDK to an OpenWRT platform on a mesh Wi-Fi extender with Realtek hardware.

Embedded C · Embedded Linux · OpenWRT · Realtek SDK · Ubuntu · Git · Agile

Firmware Engineer — Cybersecurity · GE Energy · Contract
May 2018 – May 2020

Implemented cybersecurity protocols across the embedded product range. Conducted threat-vector analysis and FMEA. Designed and implemented secure U-Boot and kernel using RSA/ECC cryptography with X.509 certificates on an iMX6 platform. Developed a C module validating X.509 public keys in iMX6 OTP fuses to prevent boot of unsigned images. Additional work covered CAN/RS-232/RS-485/Ethernet sensor integration and data-logging on Linux-based loggers.

Embedded C/C++ · Secure U-Boot/Yocto · RSA/ECC · X.509 · mbedTLS · OpenSSL · iMX6 · FMEA · Threat modelling

Embedded Development Engineer · Ampetronic Ltd. · Contract
Nov 2017 – Feb 2018

Developed a firmware update system for an ARM Cortex device via the Serial Wire Debug port and integrated a MEMS microphone on an STM32 platform, as part of a hearing-impaired assistive technology product using Bluetooth Low Energy.

ARM Cortex · SWDP · Nordic nRF52832 · STM32 Cortex-M7 · BLE · IAR · Embedded C/C++

Senior Embedded Software Engineer · Ideal Boilers · Contract
Mar 2017 – Aug 2017

Validated a third-party wireless ISM-band heating control system design. Performed detailed hardware and firmware review and built bespoke validation tooling to verify system operation against specification.

ISM band radio · Renesas RL78/RX63x · ARM · STM32 · Nordic nRF52 · Contiki · OpenThread

Firmware Engineer — Bluetooth · Cloudtag · Contract
Jan 2017 – Mar 2017

Investigated and resolved Bluetooth connectivity issues in a BLE wrist-strap fitness tracker. Used Frontline Protocol Analyser to diagnose RF-layer problems, then applied firmware fixes to the STM32/nRF8001 platform.

BLE · Nordic nRF8001 · ARM · STM32 · Frontline Protocol Analyser · Eclipse · Win32

Firmware Engineer — RF · Harvard Engineering Ltd. · Contract
Nov 2015 – Nov 2016

Supported RF compliance certification for wireless street-lighting products and developed new wireless control technologies. Designed a BLE light-detector (Nordic nRF51442) and an infrared/Bluetooth gateway for radio diagnostics. Provided mentoring to junior software engineers.

Silicon Labs Si106x · ARM9 · Nordic nRF51442 · BLE · STM32 · PIC18 · UART/I2C/SPI · Win32

Embedded Software Engineer · Nextgen Technologies Ltd. · Contract
Apr 2015 – Nov 2015

Designed software and hardware for an automotive interoperability test product. Delivered driver and UI development on ARM Cortex-M4/M7, CAN/LIN bus drivers, an embedded Linux Wi-Fi access point for 5 GHz phone connectivity, and Windows 8 Embedded platform work.

ARM Cortex-M4/M7 · Ubuntu Linux · CAN bus · LIN bus · emWin UI · STM32 · PIC18 · Win32

EARLIER CAREER (1998–2011)

2011	**E.R.P.M** — PIC, hardware design, GSM
2010	**Retail Systems Technology** — Win32, FoxPro, MySQL
2008–09	**Duval Eye Ltd.** — PIC, low-power mobile camera design
2007–08	**American Dynamics** — Texas Davinci DSP, ARM9, Linux, video streaming
2006–07	**Ultimate Security Systems USA** — PIC, Nordic RF, automotive security system
2006	**Inova Designs** — PIC, GSM/GPRS, GPS — hardware & firmware design
2005–06	**Round Solutions Ltd. (Germany)** — PIC, GSM/GPRS, GPS — hardware & firmware design
2005	**Collinson PLC** — PIC, ISM band radio — hardware & firmware
2002–04	**Retail Systems Technology** — PIC, Windows CE .NET, Win32, ISM band radio
2001	**Meggit Defence Systems Ltd.** — TI TMS320, 8051 assembler, Borland Turbo C
1999–01	**SLC Technologies Ltd.** — PIC, NEC V850, x86 assembler, Borland C++ Builder
1998–99	**Retail Systems Technology** — 8051 assembler, Borland C++ Builder, Keil
1998	**Meggit Defence Systems Ltd.** — Keil, 8051, HiTex ICE, Borland Turbo C

EDUCATION & PROFESSIONAL MEMBERSHIP

Belfast College of Technology · School of Marine Electronics & Radio
Full Technological Certificate in Electrical Engineering (FTC) / HNC — Marine Electronics, Radio & Radar

Member, Institution of Engineering and Technology (M.I.E.T.)

Member, Chartered Institute for IT (MBCS)