

## Dominic Mason

### Development Engineer | MEng Electronic and Computer Engineering

Development engineer primarily interested in software/firmware and electronic engineering. Currently an MIET working towards chartership, while working on embedded firmware, applications software, and circuit design in AC drives. Skilled in embedded firmware engineering, electronic engineering, and software development.

Web CV: [domson.dev](https://domson.dev)  
Website: [domson.dev](https://domson.dev)  
LinkedIn: [dominic-mason](https://www.linkedin.com/in/dominic-mason)  
GitHub: [dominicmason555](https://github.com/dominicmason555)

## Work

### Nidec Drives

Research and development of Variable-Speed-Drives (VSDs) and their supporting industrial automation devices such as PLCs and commissioning software.

#### Development Engineer

Mid-Wales

2023 – Present

Learning the principles of Functional Safety through designing and developing a real-time embedded system, as well as maintaining an existing system, while collaborating between departments.

- Designed a concept embedded functional safety system through PC simulations in Python and C on pre-captured signals.
- Developed prototypes of the system in C on a microcontroller, testing the limits of real-time signal processing on the target platform.
- Created real-time visualisation and plotting software to monitor the performance of the microcontroller system.
- Prototyped implementations of encoder communications protocols in MISRA C on an existing functional safety platform.
- Instrumented a functional safety platform with tracing and performance profiling.

#### Graduate Engineer

2021 – 2023

Gained experience in a wide range of technical fields, and skills in communicating complex systems to multidisciplinary teams, management, and end users.

- Maintained and upgraded an industrial fieldbus module's embedded C++ codebase to pass new conformance integration tests.
- Added integration for new products to existing embedded real-time motion control firmware and PC GUI commissioning software, while communicating design changes across departments and countries.
- Created interactive HTML user manuals with diagrams to explain complex functionality to end users.
- Created a hardware-in-the-loop regression test suite for a functional safety VSD option module in C#.

#### Undergraduate Engineer

2018 – 2021

Summer work placements between university terms, focusing on digital design and power electronics, putting university learning into practice.

- Worked on building and simulating digital twins of VSDs using PLECS, and exploring the effects of design changes on total harmonic distortion.
- Designed and laid out a power PCB used in a high-power VSD using Siemens EDA.
- Worked on porting a Verilog design for rotary encoder signal processing between CPLD families.

## Volunteering

### STEM Learning

#### STEM Ambassador

2023 – Present

Working to inspire young people's interest in and understanding of STEM subjects and assist local schools with STEM education, as part of a team.

- Running classroom workshops giving students hands-on experience prototyping circuits for real-world applications.
- Running and developing interactive demonstrations of electronics and control systems at careers fairs.
- Giving presentations and Q&A sessions to help de-mystify the field and careers in STEM subjects.

## Education

### University of Nottingham

#### Electronic and Computer Engineering

**2017 – 2021**

MEng - Master in Engineering - IET Accredited

First class (Hons)

- Individual project: Design and implementation of an advanced driver assistance system using embedded machine learning for computer vision
- Group project: Design and implementation of a low-power long-range mesh network for distributed sensor systems
- Group project: Creation of a software package for viewing 3D models using C++, Qt, and VTK
- Embedded computing
- Advanced computational engineering
- Artificial intelligence and intelligent systems
- Digital signal processing
- HDL for programmable devices
- Analogue electronics
- Advanced engineering mathematics
- Scalable cross-platform software design
- IT infrastructure and cybersecurity
- Electrical energy conditioning and control
- Electronic processing and communications

## Skills

#### Software Engineering

C++ C C# Python Java Clojure JavaScript Qt Framework Parallel Algorithms  
GPGPU Databases / SQL Computer Vision GUI Applications

#### Embedded Firmware Development

C++ C RTOS Real-time Motion Control Digital Signal Processing Performance Profiling  
Automated Testing

#### Electronic Engineering

Digital Design (VHDL) Signal Processing Analogue Electronics PCB Layout  
Circuit Simulation

#### Written Communication and Documentation

Microsoft Office Suite LaTeX Doxygen HTML

#### Industrial Automation

PLCs IEC Structured Text Fieldbus Variable Speed Drives

## Interests

Woodworking Programming Home Automation Electronics Music