

A published academic with a strong interest in designing and profiling high performance hardware and software systems. As an educator, I have developed great interpersonal skills working with students from a variety of disciplines and through engagement with the research community. As a scientist, I have the motivation and the drive to find the optimal solution through both well-proven and novel methods, using a unique skill set that combines programming proficiency with an understanding of computational research requirements at scale.

EDUCATION

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|---|-------------|
| PhD (<i>writing up</i>) High Performance Computing | 2014 – 2017 |
| <i>HPC Research Group, The University of Huddersfield</i> | |
| BSc Music Technology Software Development | 2010 – 2014 |
| <i>The University of Huddersfield</i> | |

EXPERIENCE

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|---|---------------------|
| Consulting | Jan 2017 - Present |
| <i>Self Employed</i> | |
| <ul style="list-style-type: none">○ Configuration of the HPC cluster at the Turbocharger Research Institute, Huddersfield, UK, in order to run simulations using the commercial Ansys CFX package in parallel, identifying barriers to scalability where present | |
| Lecturer in Parallel Computer Architectures | Oct 2014 - Present |
| <i>The University of Huddersfield</i> | |
| <ul style="list-style-type: none">○ Teaching parallel programming concepts to final year BSc and MSc students○ Producing training materials to support students' learning and updating them to reflect the current supercomputing trends in academia and industry | |
| HPC Administrator | Oct 2014 - Present |
| <i>The University of Huddersfield</i> | |
| <ul style="list-style-type: none">○ Day to day maintenance and support for the University HPC grid○ Installation of new software/hardware, and profiling the performance of commonly used scientific codes within the user community (predominantly CFD, Monte Carlo simulation and Bioinformatics pipelines)○ Providing a unique expertise that combines programming with an understanding of researchers' requirements, translating them to job configurations and improved code that run efficiently on the HPC assets | |
| Systems Assistant | Jan 2012 - Dec 2012 |
| <i>AVT Reliability</i> | |
| <ul style="list-style-type: none">○ Development of a Big Data driven internal reporting tool using open source software | |

SKILLS

Parallel programming in shared, distributed memory and GPU architectures: C, C++, Python, MPI, OpenMP, CUDA, OpenCL

Commercial and open source CFD: performance profiling and tuning with Fluent, CFX, OpenFOAM

System administration: configuration of cluster software stack, middleware, storage, networking

Hardware design for HPC: relation of hardware specifications and interconnect to application execution

Public speaking and professional engagement: experience in delivering conference talks, hosting discussion sessions and running training workshops

Adaptability: willingness and enthusiasm to learn new methods, techniques and domain specific knowledge in order to understand a project's requirements

SIGNIFICANT PROJECTS

Scaling OpenFOAM simulations on high latency networks *publication pending*

The aim of this project was to determine the scaling performance of incompressible OpenFOAM solvers on high latency network environments. The early results demonstrated that the potential savings of a geographically distributed HPC cluster, in terms of investment in power and cooling infrastructure, can outweigh the performance penalty incurred by additional communication latency in the application.

Heterogeneous high-throughput programming in OpenCL *<http://eprints.hud.ac.uk/id/eprint/28627/>*

This paper presents the benchmarking results of a framework designed to dispatch computational kernels written in OpenCL to a variety of processing elements, such as GPGPUs, FPGAs and conventional CPUs, using the HTCCondor middleware.

Lowering the barrier: Virtual Container Clusters *<https://doi.org/10.1093/comjnl/bxw102>*

This journal documents the rationale and initial performance analysis of a framework designed to improve the accessibility to large scale computing for the average scientist. The software promotes a *reusable environment* that can be used to configure and pilot an analysis on a small scale workstation, that can be subsequently scaled up to a large resource without modification.

PERSONAL

As an open source enthusiast, I enjoy attending and presenting at user group meetings and social events. In my spare time, I also undertake amateur automotive engineering with a passion for classic Volkswagen and Mercedes-Benz cars.