

Life as an RSE at the University of Birmingham UK

SC23: RSE in HPC Workshop
“Growing the RSE Community”



Hello world!



👋 Senior Research Software Engineer

💻 Baskerville Tier 2 HPC 🛰️ Space Weather forecasts for ESA

👜 Joined the Research Software Engineering group Dec 2021

🇫🇷 3 years post-doc in France

💧 PhD in Fluid Dynamics at University of Leeds

Advanced Research Computing

- ▶ Centralised service
- ▶ HPC support for BlueBEAR, Baskerville and Sulis
- ▶ Research Software Group – RSE/RAS/RDSsci
- ▶ AIS – sysadmins/infrastructure/networking
- ▶ REDG – outreach/training
- ▶ RSE career progression

Senior RSE → RSE & Manager

Senior RSE → Principal RSE

- ▶ ~10% FTE on enrichment activities



RSE Midlands



RSE Midlands

- ▶ Launched June 2022 with support from the UK RSE Society
- ▶ Keynotes from UK RSE Society and Software Sustainability Institute, lightning talks, vendor talks from Intel, Lenovo and Nvidia
- ▶ Annual meeting - Birmingham 2022, Nottingham 2023, Warwick 2024
- ▶ RSE Midlands Coding Club
 - ▶ talks on topics such as Docker, testing, pre-commit
 - ▶ National Center for Supercomputing Applications (NCSA) Takeover in June 2023

HPC-SIG

High Performance Computing Special Interest Group

- ▶ Established 2005
- ▶ Promotes use of HPC in academia through best practice in HPC provision, management and support
- ▶ Membership is largely made up of sysadmins with a growing RSE presence
- ▶ Recently elected Equality, Diversity, Inclusivity and Accessibility officer
- ▶ First steps:
 - ▶ Understand the current demographic of the HPC-SIG and identify an EDIA strategy
 - ▶ Implement a Code of Conduct and establish an EDIA Mission Statement
 - ▶ Seek out partnerships and mutual support with other orgs, such as UK RSE Society and Women in HPC

Women in HPC



Women in HPC Poster

Task-parallelised elastic registration of 3-dimensional mouse tibia images

S. Morath(1,4), E. Dall'Arat(2,4), V. Kadrikanathan(3,4), P. Banerjee(1,4)

1. Department of Mechanical Engineering, University of Sheffield, UK, 2. Department of Physics and Astronomy, University of Sheffield, UK, 3. Department of Computer Science and Software Engineering, University of Sheffield, UK, 4. Institute for In Silico Medicine, University of Sheffield, UK

Scientific background

- Mice are commonly used animal models to study bone diseases
- Bone geometry assessment in 3-dimensions can improve understanding of diseases and treatment effects
- Geometry information is extracted from high resolution (10.4 μm) 3-dimensional image stacks
- Variability of bone geometry, variability between animals and changes with time require registration to a reference geometry

Image data

- 1000 young and old diseased / treated animal data, comprising 144 samples
- 1200 image slices per bone sample
- 1.5 to bone volume ~18.9 million

Registration

- Registration of all image samples to a reference geometry grid superimposed on the image
- Grid is coarser than image resolution
- Registration grid is 1/10th of image resolution

Bone section feasibility study

Images: 5 diseased + 6 treated mice at 2 ages = 22 samples = 21 registration image-pairs

Women in HPC Poster

High Performance Computing for Decoding Biosensor Signals

University of Exeter

Abstract: Biosensors are developed to detect small molecules and particles of the surrounding medium, which results in a shift in resonance frequency. This shift is measured by the resonance shift of the biosensor. The resonance shift is measured by the resonance shift of the biosensor. The resonance shift is measured by the resonance shift of the biosensor.

Women in HPC Poster

INTEGRATION OF A PARALLEL EFFICIENCY MONITORING TOOL INTO AN HPC PRODUCTION SYSTEM

Helena Vela, Marta Garcia-Gasulla, Victor López, David Vicente

We offer the users of the BSC a tool that is enabled by simply loading a module, and that will provide useful information to understand the parallel efficiency of their execution.

INTRODUCTION

TALP

Parallel performance tool developed by BSC

Guides to subset of parallel efficiency metrics by the PCR Center of Excellence

POP metrics are more than simple MPI profiles, they use the source of the data

It is lightweight and can be profiled on any system (overhead in 750 processes)

POP metrics gathered by TALP

Parallel Efficiency tool

Communication Efficiency

Batch job status

Job status

Power usage

Command

Jobscript

Start / end

Machine

Batch

Power

Command

Jobscript

Start / end

Machine

Batch

Power

Command

Jobscript

Start / end

Machine

Batch

Women in HPC

- ▶ I was encouraged to apply to speak at the WHPC workshop at ISC23 by my group leader
- ▶ Financial support from my institution to attend lowered the barrier
- ▶ Mentoring scheme prior to the conference improved my confidence in public speaking and the WHPC network helped my fear of attending a large meeting without knowing anyone beforehand
- ▶ Get involved!

WHPC@SC23: 16th International Women in HPC Workshop

Monday 13 November

9am - 5:30pm

Location: 505

Building RSE organisations: how to find RSEs in your country/region and how to motivate them to join the network and engage?

- ▶ Visible role models
- ▶ Professional and financial support
- ▶ Communication
- ▶ Build resources

e.g. Ten Simple Rules to Host an Inclusive Conference

