CAELEN FELLER

SOFTWARE ENGINEER & SYSTEMS ARCHITECT

Remote, Europe/UK | caelen-feller.github.io | caelenfeller@gmail.com

SUMMARY

Over 5 years of experience in professional software engineering and DevOps roles in High Performance Computing (HPC), accelerated computing (GPU, hybrid and quantum), systems architecture, machine learning, and research computing (medical and geological) contexts. Seeking a full-time role as part of a driven team creating meaningful value for industry, public or academia.

ROLES & EXPERIENCE

Software & Architecture Development Engineer *Partec AG, Remote* 2023 - Present

CI/CD specialist with extensive systems development and integration responsibilities

- Architected and deployed integration infrastructure for **Jupiter** (first European exascale system). Collaborated with support lead. Interfaced with product managers and external integration teams. Containerized and deployed the **ParaStation** stack on the **Kubernetes/Helm** driven runtime, with provisioning via **Ansible.** Designed and implemented a **Django/Redis-**based, scalable network information server backed by **Netbox** to drive configuration.
- Created **a bespoke VM cluster management system** in active use by internal and external clients for integration testing of software. Implemented in **Python** (with libvirt, Fabric and Jinja2), with **Ansible** provisioning, running on **ZFS** managed storage, and with full **Gitlab CI/CD integration.** Responsible for ongoing support and stakeholder training.
- Refactored and extended a **Python-C API** (including **Sphinx+Doxygen** documentation), supported CI/CD workflows, and supported widespread adoption of **Antora** documentation to modernize existing workflows across core products.

Computational Scientist *Irish Centre for High-End Computing (ICHEC), Dublin* 2023

- Developed the hierarchical storage manager **Hestia** for the IO Software for Exascale Architecture EuroHPC project. Created a full-lifecyle **Gitlab CI workflow**. Collaborated on creation of the **Proxygen-based C++** storage event management server.
- Trained with the centre's course in quantum computing toolkits for HPC.

Graduate Researcher *TCD School of Mathematics/Academic Unit of Neurology* 2020 - 2022

Research, design and implementation of EEG inverse problem solutions and image/volume segmentation using **Matlab, C++,** and **CUDA,** supervised by Prof. Kirk M. Soodhalter & Prof. Bahman Nasseroleslami.

ROLES & EXPERIENCE

Research Developer equal1.labs 2020

R&D on **medical ML** applications (X-ray classification) and **ML interpretation of quantum computing** results in Python using **PyTorch** and **Tensorflow,** in collaboration with physicist team.

Mathematics Educator *Junior Mathematics Enrichment, UCD* 2019-2022

Created and delivered course to nurture problem solving and STEM interest in 2nd level students.

Teaching Assistant *TCD School of Mathematics* 2019

Created rubric and graded for MA2214 - "Fields. Rings and Modules".

Research Intern *Edinburgh Parallel Computing Centre & PRACE* 2019

"Visualising Parallel Computations for Education on Raspberry-Pi Clusters" - Created parallel simulations with **MPI in C/C++** and visualised communication on LEDs using web servers. Documented and explained process to public via blogging, podcasts, and video presentations with EPCC's outreach team.

Research Intern *Ausar Geophysical* 2019

"Seismic data denoising and deblending using deep learning" Internship with start-up company focused on denoising signals with **CNN (convolutional neural networks)** with **PyTorch** in collaboration with the founder/owner, Dr. Alan Richardson.

Research Intern *TCD School of Mathematics (Supervised by Prof. Jan Manschot)* 2018

"Arbitrary Precision Computation and Visualisation of Modular Functions" Reviewed literature and developed **C library** and algorithms for visualising complex functions to arbitrary accuracy.

Other Experiences/Personal Projects 2016 - Present

- Computer Graphics & Vision Projects - C++ OpenGL, and Python/C++ OpenCV experience
- Freelance Web Development - C# + ASP.NET Core WebApp projects, JS (Vanilla/NodeJS/React), HTML & CSS experience, Wordpress & Gatsby site development & theming.

EDUCATION

BA Mathematics - Awarded 1H Trinity College, Dublin 2016 - 2020

Final Year Project: "Solving Laplace Equations with Corner Singularities" (in Matlab)

Training Courses

- SMC xScale Training Program by Eviden, Jülich Supercomputing Centre 2024
- Introduction to Scalable Deep Learning Course, Jülich Supercomputing Centre 2023
- PRACE Training Course in Message Passing Programming with MPI EPCC, Edinburgh 2019

References available upon request. I hold EU (Irish) and US passports.