

**[SORSE] Improving
performance of parallel
applications and your career
as an RSE**

Report of Contributions

Contribution ID: 1

Type: **not specified**

How to understand and improve the performance of your parallel applications using the POP Methodology

Friday, October 16, 2020 9:00 AM (30 minutes)

HPC applications are often very complex and their behavior depends on a wide range of factors from algorithms, to programming models, library and language implementations and hardware. The task of understanding performance bottlenecks of a parallel code and making improvements often ends up being a daunting trial and error process. To make the problem even more complicated, many HPC applications inherit different layers of legacy code, written and optimized for a different computing era. To optimize the performance of a parallel application, the first step is to understand the behavior of the application. However, there is often a lack of quantitative understanding of the actual behavior of HPC applications. The Performance Optimisation and Productivity (POP) Centre of Excellence, funded by the EU under the Horizon 2020 Research and Innovation Programme, attempts to establish a quantitative methodology for the assessment of parallel codes. This methodology uses a set of hierarchical metrics, where each metric represents relative impact of one cause of inefficiency in parallel codes. These metrics provide a standard, objective way to characterise different aspects of the performance of parallel codes. In this talk, I will review the development of these metrics and give examples of how use of these metrics allowed us to quickly identify the performance bottlenecks of applications from different domains of science and engineering. In addition, the POP methodology facilitates training HPC experts and performance analysts by defining a common and systematic approach to assessing and improving parallel codes.

Presenter: HOSSEINI, Fouzhan (The Numerical Algorithms Group (NAG))

Session Classification: Talks

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Becoming a self-employed RSE web developer.

Friday, October 16, 2020 9:30 AM (30 minutes)

This is a two part talk, initially focussing on how I changed career and established a sole trader business, the second part on the latest web development techniques I use.

Early last year I started doing additional web and mobile app development in my evenings and weekends, leading me to start my own sole trader business. In January I became self-employed full time, leaving my RSE job at the University of Leicester to begin contract work for the Wellcome Trust DataLabs. In this talk I will cover the pros and cons of this kind of career change, the lessons I learnt and personal skills required to make the jump. Exposure to this kind of RSE career change would hopefully be insightful and useful to all attendees thinking about their future careers.

The second part of my talk will focus on the latest web development techniques that myself and colleagues use at the Wellcome Trust. We're currently building a data sharing platform for universities and funders as part of the Research on Research Institute (RoRI). I will walk through how a modern web/app development project is set up, the options for languages and frameworks at each stage and what we're using to build the RoRI platform. I will also discuss how this relates to mobile app development. From this part of the talk attendees should gain some basic knowledge on how modern web and app development is done, and how they can apply these techniques to their own RSE projects.

My talk would suit a broad target audience as it covers both RSE careers and some wide ranging techniques. As both web and mobile app development are listed in the wishlist I believe there is an interest in the community for a talk such as this.

Presenter: FOREY, Teri

Session Classification: Talks