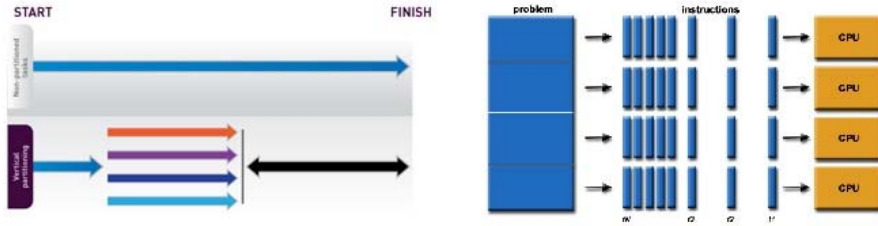


EPSRC Centre for Doctoral Training in Pervasive Parallelism



February 2015

Welcome to the third edition of the EPSRC CDT in Pervasive Parallelism Industry Partner Newsletter. In this issue we provide an update on the CDT PPar Conference and Industrial Engagement Event, outline our suggested model of industry sponsorship and announce the research topics proposed by the second round of CDT PPar applicants. Actions you can take to engage with and support the CDT are highlighted below. Thank you for reading!

Contents:

1. CDT PPar Conference and Industrial Engagement Event
2. Company Support for CDT Projects: Levels and Benefits
3. Student Recruitment Success and Applicant Research Areas
4. Reminder: Advertise Internships and Suggest Project Ideas on PPar Website

1. CDT PPar Conference and Industrial Engagement Event (2 - 3 June 2015)

Good progress has been made on planning the CDT PPar Conference and second Industrial Advisory Board meeting. We have confirmed four keynote speakers who work in widely varying research areas within the School of Informatics. They are listed below, with the titles of their keynote talks (subject to change slightly):

- Prof Phillip Wadler, Chair of Theoretical Computer Science: "The Inevitable Coincidence: A Basis for Concurrency and Distribution"
- Prof Steve Renals, Chair of Speech Technology: "(Deep) Neural Networks for Speech Recognition"
- Prof Nigel Topham, Chair of Computer Systems: "Many Cores Make Light Work"
- Dr Vittorio Ferrari, Head of CALVIN Research Group on Visual Learning: "Visual Learning and Recognition at CALVIN"

We have taken into account many of your suggestions from the last Industrial Advisory Board meeting about structuring the event. For example:

- Four keynote speakers will give talks about overarching, higher-level research areas across the School of Informatics, before the more specific student presentations.
- CDT PPar students will present their research in more depth than at the Kick-off. The event will also feature longer talks by senior PhD students working in areas related to parallelism, concurrency and distribution.
- The poster session will take place between the PhD student talks and the PPar student talks. After hearing the talks by the PhD students, you will be able to ask them questions and discuss their projects at the reception / poster session. Conversely, the PPar students' posters will serve as an introduction to their work before their presentations the following day.

Registration is now open at: <http://edin.ac/1FO9RiL>. A formal invitation will be sent out in March.

Action: We would also like to invite recruitment staff from our partner companies, as they may be interested to meet the PhD students at the event (as well as the CDT PPar students, to keep in mind for future years). We would appreciate it if you could please:

- put us in touch with the relevant HR or recruitment contact(s) at your company via email,
- give us their email address, so we can send them an invitation directly, or
- forward the invitation text from the email to them, and give us their email address so that we can follow up.

2. Company Support for CDT Projects

Your support of the CDT PPar to date, expressed via letters, attendance at events etc., is invaluable for us and long may it continue! We appreciate that - so far - your support has been largely philanthropic or speculative, but here is a way to take it further:

Your direct engagement on individual projects of interest is a key ambition of the CDT PPar, and the School of Informatics has a lot of experience in running company-supported PhDs. We always take a flexible approach to such projects and we expect them to involve some kind of *quid pro quo*. So, for the CDT PPar, what's the deal?

There are various ways companies could support PhD projects in the CDT, which fall into the categories of 'cash' or 'in-kind' contributions:

- influencing the topic
- influencing the project itself via co-supervision
- offering the student access to data, equipment or other resources
- hosting the student for a placement
- financial support of the project

What can the CDT offer companies in return? The most important output of a PhD is, of course, an appropriately skilled graduate. Technically, the University doesn't own its students, so we can't really offer them to you 😊; however, getting involved in their projects, hosting them etc. is a great way to build 'mindshare' with them and get them thinking about your company, its technologies and markets. At the same time, you can find out how they work and whether they might make suitable employees post PhD.

The other important output of a PhD is the work itself and if you've been involved in shaping or supporting a project then its outputs are likely to be of some relevance to you. In Informatics, we consider the *quid pro quo* of company support for studentships in terms of access to the intellectual property (IP) arising from (and going into) the project. We're flexible in our approach to this and our negotiating principle has always been to make the IP offer proportional to the support offer.

To provide a clear structure for this, we'd like to suggest Bronze, Silver and Gold levels for company support of projects and respective offers regarding the IP. What we're proposing here has not, at its core, been invented for the CDT – it's consistent with how we've approached company-sponsored studentships over the last few years.

On the company side, the key elements are degree of cost coverage and an 'enabling contribution', by which we mean one which is central to the project – be it data, equipment or some other critical resource.

So, for example, a Gold level partner contribution would be covering all the costs of the studentship and also providing some key in-kind contribution to the project. Silver and Bronze levels have different mixes of suggested cost coverage and enabling contributions.

On the University side, the variables are the types of license offered and the length of the option period for negotiating an exclusive commercial license. We think every company partnering with us on a project deserves an internal research license to the outputs and the opportunity to negotiate a commercial license. For Gold level support, we'll offer an automatic royalty-free, non-exclusive commercial use license to the outputs, and the longest option period for negotiating exclusivity. For Silver and Bronze levels, we'll offer the option to negotiate a commercial license (exclusive or otherwise) but the option periods will be shorter.

So 'the deal' could be summarised as:

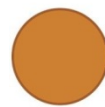
Partner offer:



- 100%+ cost coverage + enabling contribution



- >50% cost coverage or
- 25-50% cost coverage + enabling contribution

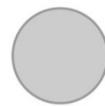


- 25-50% cost coverage or
- <25% cost coverage + enabling contribution

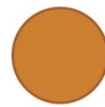
University IP offer:



- internal research license
- royalty-free non-exclusive commercial license
- exclusivity option to end of PhD Project + 9 months



- internal research license
- exclusivity option to end of PhD Project + 6 months



- internal research license
- exclusivity option to end of PhD project + 3 months

We haven't mentioned our background IP yet (i.e. pre-existing University IP which is used on a project). The University will make available any of its background IP required to commercially exploit a project's foreground IP. By its nature, the background IP is often not available for exclusive commercial licensing.

We hope you'll think this is a generous and practical approach – but we welcome your feedback! We aren't planning to hand out medals (metal or chocolate!) but we think the levels are a useful way to categorise support and related offers. If you would like to discuss supporting a studentship or otherwise engaging with the CDT PPar, please contact ppar-cdt@inf.ed.ac.uk.

3. Student Recruitment Success and Applicant Research Areas

Recruitment of the second PPar student cohort has been very successful so far. We have received very strong applications and have begun to make offers, some of which have already been accepted. The second cohort, like the first, will include many students from across the EU, as well as one or two excellent applicants from further afield. The applicants plan to research a broad range of topics from across the parallelism spectrum, including:

- Autotuned code partitioning and scheduling for heterogeneous systems
- Programming abstractions for GPGPU programming
- Software testing with GPGPUs
- Parallelized simulation of complex systems
- Processing in memory for big data

Action: Please let us know if you are particularly interested in any of the above topics, and would like to engage with the relevant applicant if they join the programme, e.g. through offering guidance on shaping their research project, co-supervision, an internship in future years or a (full or part) studentship. We would be happy to give you more information about the proposed project, and could put you in touch with the applicant if you both approve.

4. Reminder: Opportunity to Advertise Internships and Suggest Project Ideas on PPar Website

Thank you to Oracle, Codeplay and CriticalBlue for providing information about internships for our website: <http://pervasiveparallelism.inf.ed.ac.uk/internships/>

Action: If your company is looking for interns, please fill in our internship information form: <http://goo.gl/forms/SW1Nn3UB1U>

Our Project Ideas page now lists many research project ideas, for applicants and current students. CriticalBlue have provided three ideas; the rest have been suggested by CDT PPar supervisors: <http://pervasiveparallelism.inf.ed.ac.uk/research-project-ideas/>

Action: If there is a particular research project or problem on which you would like one of our students to work, please email us a brief description, and we will add it to the website. If a student is interested in your project idea, we will first let you know, and could then put you in touch with the student.

Over time, we plan to use these project ideas to help select and guide students and match them up with academic and industrial supervisors where appropriate.

Thank you for reading. Please send responses and any questions to ppar-cdt@inf.ed.ac.uk.
As always, we greatly appreciate your support.

