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ESR 5 Position: Optimization - Parallelization - Vectorization ^[1]

Do you want to work on next-generation computing at CERN and at Intel?

ICE-DIP ^[2] is the Intel-CERN European Doctorate Industrial Program, a Marie Curie Actions project within the European Union's 7th Framework Programme. For its newly opened research posts, ICE-DIP ^[2] is seeking bright candidates in the areas of computer science and engineering to undertake doctoral training.

The Challenge

CERN is the European Organization for Nuclear Research ? a world-wide particle physics laboratory in Geneva, Switzerland and home to the largest machine ever built by man, the Large Hadron Collider (LHC). Every year, the four major LHC experiments collect over 25 petabytes of data. These collaborations are now planning upgrades which will increase data rates by as much as 100x within several years ? but computing facilities fit to handle such amounts of data do not exist yet.

How can you help?

If you're an enthusiastic and talented student or young professional thinking of a doctorate, you can make a difference. If successful, you will be offered a CERN Fellowship contract with a maximum duration of 3 years.

In this project, you will work on enabling efficient data processing on accelerators. In particular, you will be looking to exploit parallelization opportunities and ensure forward

scaling in Data Acquisition Networks, such as those used for CERN's Large Hadron Collider. Your work will involve collaboration with your peers in the project, working on related topics. You will solve real-world problems from the area of High Energy Physics and resulting in an implementation of a data processing system.

You will be registered on the structured PhD programme at the National University of Ireland Maynooth, with fees covered for the first three years. Your academic supervisor will oversee the academic aspects of your work necessary for you to obtain your PhD degree.

Further information and requirements

You need not have graduated yet, but if you have, your graduation should have occurred after September 1st 2009. All our posts offer a competitive remuneration package and are open to EU and non-EU nationals alike.

Scientific and technical skills required:

- Master's-level degree in computing or an equivalent field (by August 2013)
- Deep understanding of modern PC platform architecture and parallel computing
- Strong programming skills in Linux, with knowledge of parallelization and vectorization environments
- Modelling and optimization skills are welcome
- Experience with data acquisition systems or networks is welcome
- High Performance Computing experience is welcome

Non-technical skills required:

- Open mind with a hunger for science and a desire to enter a doctoral program.
- Flexibility and willingness to travel ? mobility is a key part of the Marie Curie Actions and you will spend approximately 50% of your appointment away from CERN. You will stay at CERN, in Ireland and in France over the course of the project, and are expected to participate in international conferences.
- Willingness to develop a broad portfolio of skills.
- Self-governing, Independence, Flexibility.
- Ability to work in a team work in a multi-cultural environment
- Good knowledge of English - both oral and written - is mandatory. Applicants whose first language is not English will be required to provide evidence of competency at IELTS 6.5 or equivalent (e.g. CAE, CPE).

Go to [\[3\]www.cern.ch/jobs](http://www.cern.ch/jobs) ^[3] to apply - make sure to specify your priorities in the application if you apply for multiple postings. Should you have questions, please send them by e-mail to [icedip.jobs\(at\)cern.ch](mailto:icedip.jobs(at)cern.ch) (inquiries only - emailed job applications will be discarded). Deadline to apply: 31 May 2013.

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