2018-00337 - Postdoc position in Cloud computing M/F

About the research centre or Inria department

The Inria Lille - Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution the socio-economic development of the Nord - Pas-de-Calais Region, the Inria Lille - Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

Context

The Spirals project-team is conducting research activities in the domains of distributed systems and software engineering.

Spirals aims at introducing more automation in the adaptation mechanisms of software systems, in particular, transitioning from adaptive systems to self-adaptive systems. Spirals targets especially two properties: self-healing and self-optimization. With self-healing, Spirals aims at studying and tailoring data mining and machine learning solutions for the design and implementation of software systems. This contributes to the goal of obtaining solutions for automatic software repair. With self-optimization, Spirals aims at sharing, collecting, and analyzing distributed behaviors and data to continuously tailor, optimize, and keep under working conditions software systems. This participates to the goal of obtaining distributed eternal systems.

Spirals is a joint project-team between Inria and the University of Lille within UMR 9189 CRISTAL. Spirals originates from the ADAM project-team (2008–13).

Assignment

This position consists in conducting research in the area of software engineering and (distributed) systems in collaboration with the members of the Inria Spirals project-team.

In particular, this position focuses on the design and implementation of novel middleware solutions to drastically improve the power efficiency of modern data centers. In the context of an ongoing collaboration with a Cloud provider, Scalair. The research activities covered by this position will consider various layers of opportunities for reducing the power consumption of the cloud at large, from alternative hardware architectures, to novel software optimisations.

To bootstrap the activities, the initial research contributions will leverage our previous works on cloud computing optimisations [1,2] and energy monitoring [3,4] in production. Depending on the orientation of the results, contributions to open source projects developed by our research group, like PowerAPI (http://powerapi.org) and the rest of the community will be encouraged.

Given the position, the researcher recruited as part of the team will be encouraged to work in collaboration with other members of the team (phd students, engineers, interns) and be involved in the supervision of PhD thesis related to the topic of interest. This also applies to ongoing and future academic and industrial collaboration on the topic of energy efficiency. We are therefore looking for highly motivated applicants to fulfill this position.

Main activities

Main activities:
- Study the state-of-the-art solution published in this domain
- Propose and design novel solutions to reduce the energy footprint of datacenters
- Prototype and evaluate the designed solution
- Publish the obtained results in high quality venues (conferences and journals).
- Disseminate the software results if applicable

**Skills**

Technical skills and level required:

- Knowledge of system, network and storage challenges related to the cloud
- Knowledge of software engineering principles (and practices)
- Curiosity, autonomy and social capabilities

Languages:

- English
- French

**Benefits package**

- Subsidised catering service
- Partially-reimbursed public transport

**Remuneration**

Around 31 000 € bruto yearly