2018-00403 - Post-doctoral - "Secure and privacy-preserving sharing of genetic data for biomedical analyses"

**Contract type:** Public service fixed-term contract  
**Level of qualifications required:** PhD or equivalent  
**Fonction:** Post-Doctoral Research Visit  
**Level of experience:** Up to 3 years

**Context**

Biomedical analyses often rely on cooperation between (teams of) medical doctors and researchers. To this end, genetic, image or clinical data has to be shared and analyzed. However, leakage of such data, especially genetic data, is highly problematic in that it very often divulges critical personal data.

The STACK team develops programming-level abstractions and corresponding Cloud-based implementations in order to preserve privacy properties of shared genetic data and secure, often complex, workflows for biomedical analyses. Furthermore, we pursue corresponding real-world applications in cooperation with geneticists from Brest and Nantes. This work will be carried out in cooperation with partners from the PrivGen project (https://privgen.cominlabs.u-bretagneloire.fr/) and industrial partners. A recent relevant publication is publicly available at: https://hal.inria.fr/hal-01692620v2

The position involves travelling for meetings with the partners and to (inter)national conferences.

**Assignment**

The STACK team is currently designing, implementing and proving the correctness of a platform for the distributed programming of shared biomedical analyses involving genetic analysis. In the context of this platform, the selected candidate is expected to develop innovative domain-specific abstractions for the programming of such analyses, their implementation and correctness proofs.

**Main activities**

Main activities:

- Analyze real-world biomedical analysis involving sharing of genetic data
- Design suitable programming-level abstractions for high-level languages
- Design and implement a corresponding cloud-based implementation platform

**Skills**

- Good programming knowledge and skills (Java mandatory, Python and functional programming is a plus)
- Good knowledge of Cloud programming
- Knowledge of biomedical analyses, in particular involving genetic data, is a plus
- Knowledge, skills in formal methods is a plus

**Benefits package**

- Subsidised catering service
- Partially-reimbursed public transport
- Social security
- Paid leave
- Flexible working hours

**Remuneration**

**General Information**

- **Theme/Domain:** Distributed programming and Software engineering  
  Information system (BAP E)
- **Town/city:** Nantes
- **Inria Center:** CRI Rennes - Bretagne Atlantique
- **Starting date:** 2018-05-01  
- **Duration of contract:** 1 year, 6 months  
- **Deadline to apply:** 2018-05-15

**Contacts**

- **Inria Team:** STACK  
- **Recruiter:** Sudholt Mario / mario.sudholt@inria.fr

**The keys to success**

We are looking for a highly motivated, scientifically and technically very good candidate, who values the integration in an international and diverse team.

**Conditions for application**

Please submit online: your resume, cover letter and letters of recommendation.

For further information, please contact Mario Südholt (Mario.Sudholt@imt-atlantique.fr)

**Defence Security**

This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy**

As part of its diversity policy, all Inria positions are accessible to people with disabilities.

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**Warning:** you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not guaranteed.
Monthly gross salary amounting to 2653 euros