Job vacancy #2023-06848

Post-Doctoral Research Visit F/M Optimization of Regular Path Queries for Property Graphs

Contract type: Fixed-term contract
Renewable contract: Yes
Level of qualifications required: PhD or equivalent
Fonction: Post-Doctoral Research Visit

About the research centre or Inria department

The Centre Inria de l'Université de Grenoble groups together almost 600 people in 22 research teams and 7 research support departments.

Staff is present on three campuses in Grenoble, in close collaboration with other research and higher education institutions (Université Grenoble Alpes, CNRS, CEA, INRAE, ...), but also with key economic players in the area.

The Centre Inria de l'Université Grenoble Alpe is active in the fields of high-performance computing, verification and embedded systems, modeling of the environment at multiple levels, and data science and artificial intelligence. The center is a top-level scientific institute with an extensive network of international collaborations in Europe and the rest of the world.

Context

The position is within the TYREX team at Inria, LIG CNRS and local universities (UGA and Grenoble INP).

Assignment

Assignments:
Under the supervision of Nabil Layaida and Pierre Genevès, the recruited person will be in charge of conducting research on path-based graph query languages and their optimisation.

For a better knowledge of the proposed research subject:

The Tyrex team recently proposed muRA [1]: an extension of relational algebra for optimising recursive queries. This is achieved through the introduction of a new fixpoint operator, and new rewrite rules, that enable new query evaluation plans that used to be out of reach with earlier approaches. One important application of this theory is the optimization of recursive queries over graphs, such as the ones found in recent graph query languages [2,3]. In particular, the theory muRA has been proved very useful to optimize UCRPQs queries over knowledge graphs. Property graphs are even more general than knowledge graphs because they allow both edges and vertices to be annotated not only with a label but also with a list of key/value pairs. This led to the development of specific query languages for property graphs with various characteristics [3]. The proposed research is to further investigate the application of this theory in the context of query languages suited for property graphs.


Main activities
Responsibilities:
The person recruited is responsible for conducting research, taking initiatives for implementing the research agenda, and publishing in top-level venues of the field.

Skills
Excellent communication skills

Benefits package
- Subsidized meals
- Partial reimbursement of public transport costs
- Leave: 7 weeks of annual leave + 10 extra days off due to RTT (statutory reduction in working hours) + possibility of exceptional leave (sick children, moving home, etc.)
- Possibility of teleworking and flexible organization of working hours
- Professional equipment available (videoconferencing, loan of computer equipment, etc.)
- Social, cultural and sports events and activities
- Access to vocational training
- Social security coverage under conditions

Remuneration
2788 € gross salary / month

General Information
- Theme/Domain: Data and Knowledge Representation and Processing Information system (BAP E)
- Town/city: Montbonnot
- Inria Center: Centre Inria de l'Université Grenoble Alpes
- Starting date: 2024-02-01
- Duration of contract: 8 months
- Deadline to apply: 2023-11-25

Contacts
- Inria Team: TYREX
- Recruiter: Genevès Pierre / pierre.geneves@inria.fr

About Inria
Inria is the French national research institute dedicated to digital science and technology. It employs 2,600 people. Its 200 agile project teams, generally run jointly with academic partners, include more than 3,500 scientists and engineers working to meet the challenges of digital technology, often at the interface with other disciplines. The Institute also employs numerous talents in over forty different professions. 900 research support staff contribute to the preparation and development of scientific and entrepreneurial projects that have a worldwide impact.

The keys to success
Excellent research background in Databases and/or Programming Languages on graph query languages

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.

Instruction to apply
Applications must be submitted online via the Inria website. Processing of applications submitted via other channels is not guaranteed.

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.