Job vacancy #2023-06814

Engineering position on different aspects of eXplainable AI

Contract type: Fixed-term contract
Level of qualifications required: Graduate degree or equivalent
Function: Temporary scientific engineer

About the research centre or Inria department

The Inria Rennes - Bretagne Atlantique Centre is one of Inria’s eight centres and has more than thirty research teams. The Inria Center is a major and recognized player in the field of digital sciences. It is at the heart of a rich R&D and innovation ecosystem: highly innovative PMEs, large industrial groups, competitiveness clusters, research and higher education players, laboratories of excellence, technological research institute, etc.

Context

The recruittee will work conduct different engineering tasks, related to two projects.

1) The FAbLe project (Framework for Automatic Interpretability in Machine Learning). This project started in 2020 and is financed by an ANR(a) JCJC grant ported by Luis Galárraga, researcher at the LACODAM team in Inria - Rennes.

2) The PEPR IA, AdaptING, on the subject “Continual Learning from Knowledge Graphs”. The project is leaded par Alberto Bosio from École Central de Lyon. Élisa Fromont and Luis Galárraga, from LACODAM, are affiliated to the project.

(a) French National Research Agency

Assignment

Under the guidance of Luis Galárraga, the recruittee’s main task will be to implement and optimize some research support tools.

1. Implementation of a (socket-based) server interface for an in-memory database tailored for rule mining on knowledge graphs. This tool will be crucial for our research on continual learning from knowledge graphs. We count on two embedded implementations of the database, one in Java, one in Rust. Depending on the candidate’s competences, we will focus on one or the other.

2. Profile the current implementation of the HiPaR algorithm for interpretable regression in order to understand how to optimize it. Depending on our findings, the candidate will be in charge of optimizing the code (potentially using Cython) and release a new version of the algorithm. This task is in indirect connection to the FAbLe project.

Main activities

Main activities (5 maximum):

- Conduct regular meetings with the team members to understand the codebase
- Design, implement, and test the server interface for the in-memory database. The testing tasks will comprise running queries and plugging the interface to one of the implementations of the AMIE algorithm. We will measure the overhead caused by the remote communication.
- Release a 0.1 version of the in-memory database
- Profile and optimize the HiPaR algorithm
- Release a 0.3 version of the HiPaR algorithm

We plan to conduct the activities in a sequential way. That is, we will start with one of the tasks first and move on to the next one when we are done.

Additional activities (3 maximum):

- If the candidate is interested in conducting some research on any of the topics, they can always
talk to us to define a scope of experimentation in close relation to the aforementioned engineering activities.

**Skills**

**Technical skills and level required:**
- Ability to code in Python and scikit learn
- Ability to code either in Java or in Rust
- Basic knowledge of Machine Learning

**Languages:**
- English: ability to read and understand scientific articles written in English

**Benefits package**
- Subsidized meals
- Partial reimbursement of public transport costs
- Possibility of teleworking (90 days per year) and flexible organization of working hours
- Partial payment of insurance costs

**Remuneration**
monthly gross salary from 2655 euros according to diploma and experience

**General Information**
- **Theme/Domain:** Optimization, machine learning and statistical methods
  Scientific computing (BAP E)
- **Town/city:** Rennes
- **Inria Center:** Centre Inria de l'Université de Rennes
- **Starting date:** 2024-01-01
- **Duration of contract:** 1 year
- **Deadline to apply:** 2023-12-17

**Contacts**
- **Inria Team:** LACODAM
- **Recruiter:** Galarraga Del Prado Luis / luis.galarraga-del-prado@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.

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

For more information, please contact luis.galarraga-del-prado@inria.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.