



Offer #2024-08226

R&D Engineer - Distributed/federated machine learning over IoT data streams

Contract type : Fixed-term contract

Level of qualifications required : Graduate degree or equivalent

Other valued qualifications : PhD in Computer Science

Fonction : Temporary scientific engineer

Level of experience : From 3 to 5 years

Context

The MiMove team at Inria Paris (<https://mimove.inria.fr>) undertakes research addressing the whole lifecycle of next-generation distributed systems, from their conception and design to their runtime support, with focus on mobile systems. We develop solutions at the intersection of distributed systems and software architectures, and in particular middleware solutions. MiMove works on these topics through many national and international collaborations with academia and industry, including large-scale software development of real-world systems. MiMove's research results impact various application domains; we focus in particular on the application areas of IoT and smart cities.

Inria MiMove is one of the 7 partners of the CP4SC (Cloud Platform for Smart City) project (<https://eviden.com/industries/public-sector-and-defense/cloud-platform-for-smart-cities>) funded by the France 2030 program. The industrial CP4SC platform coordinated by Eviden/Atos aims to enable a data space which will collect data from IoT sensors as well as other data sources and will support data analytics for addressing the needs of national and local governments with regard to the development of energy, mobility and environmental policies.

Assignment

In the context identified above, the R&D Engineer will be the main contributor for Inria MiMove to the CP4SC project. The objective will be to develop a solution for distributed/federated machine learning over IoT data streams.

Main activities

Continuous data streams coming from distributed sources raise several challenges in comparison to ML inside a static centralized data repository. Furthermore, running the ML process on top of distributed/federated resources and/or near the data sources can be complex, but can also be advantageous with respect to managing computational complexity, reducing network communication, and respecting data confidentiality.

The R&D engineer will introduce, design and implement such a solution as part of one or more use case scenarios of the CP4SC project, while taking into account the requirements coming from these use cases.

In a second step, we aim to enhance our solution with Automated Machine Learning (AutoML) features. AutoML leverages algorithms and computational capabilities to automate key aspects of the ML pipeline, such as feature engineering, model selection, and hyperparameter tuning.

In addition, the R&D Engineer is expected to further support MiMove's research in relation to the above identified and other related topics.

Skills

The candidate should have either a PhD in Computer Science or a Master's degree with additional experience in research projects. Expertise is required – including experience in the implementation of related software prototypes – in one and possibly several of the following topics:

- Machine learning,
- Distributed systems,
- Internet of Things,
- Cloud/edge computing.

Besides English, a good level of spoken and written French will be a plus.

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

General Information

- **Theme/Domain** : Distributed Systems and middleware System & Networks (BAP E)
- **Town/city** : Paris
- **Inria Center** : [Centre Inria de Paris](#)
- **Starting date** : 2024-12-01
- **Duration of contract** : 12 months
- **Deadline to apply** : 2024-12-31

Contacts

- **Inria Team** : [MIMOVE](#)
- **Recruiter** :
Georgantas Nikolaos / Nikolaos.Georgantas@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

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.