Offer #2025-09065

Software engineer on private and decentralized machine learning (H/F)

Contract type : Fixed-term contract

Renewable contract : Yes

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

About the research centre or Inria department

The Inria University of Lille centre, created in 2008, employs 360 people including 305 scientists in 15 research teams. Recognised for its strong involvement in the socio-economic development of the Hauts-De-France region, the Inria University of Lille centre pursues a close relationship with large companies and SMEs. By promoting synergies between researchers and industrialists, Inria participates in the transfer of skills and expertise in digital technologies and provides access to the best European and international research for the benefit of innovation and companies, particularly in the region.For more than 10 years, the Inria University of Lille centre has been located at the heart of Lille's university and scientific ecosystem, as well as at the heart of Frenchtech, with a technology showroom based on Avenue de Bretagne in Lille, on the EuraTechnologies site of economic excellence dedicated to information and communication technologies (ICT)

Context

The position will be supported by FedMalin, a collaborative project on Federated Learning between 11 teams at INRIA. The project addresses FL challenges when deployed over the internet (privacy, heterogeneity, energy, fairness, ...) and has medicine as a main targeted application domain.

FedMalin develops several software tools, including the open source library DecLearn (https://gitlab.inria.fr/magnet/declearn/declearn2) for private and decentralized/federated machine learning and data analysis. The hired engineer will contribute to the ongoing development of DecLearn, expanding its capabilities with new algorithms and enhanced functionalities.

The activities will include interactions with the members of the project, the Magnet and Premedical teams (researchers and engineers). We also expect to conduct multi-centric medical studies across several hospitals. The activities can

also include travel, e.g., to conferences to demonstrate the developed library and to contribute to the community building effort.

Assignment

- Consolidate and extend the existing library for decentralized and privacy-preserving machine learning developed in the project
- Deploy the library in real-world conditions and experiment on synthetic and (benchmark) medical data, analyzing the benefits and the costs compared to a centralized approach.
- Publish open source code and integrate in existing libraries
- Publish scientific results in medical and computer science conferences

The Declearn project is available at
https://gitlab.inria.fr/magnet/declearn/declearn2

Main activities

- Implement federated and privacy-preserving algorithms for machine learning
- Experiment with medical partners on multicentric medical studies
- Evaluation of results
- Reporting, disseminating and presenting results

Skills

- Programming skills in Python, including object oriented programming, unit testing, documentation writing, deployment tools, asynchronous programming and networking.
- Good understanding of scientific papers on machine learning.
- Interest for machine learning and medical applications.
- Good communication skills; communication and animation of software development communities, git workflow

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

Remuneration

According to profile

General Information

- **Theme/Domain :** Optimization, machine learning and statistical methods Statistics (Big data) (BAP E)
- **Town/city :** Villeneuve d'Ascq
- **Inria Center :** Centre Inria de l'Université de Lille
- **Starting date :** 2025-09-01
- **Duration of contract :** 2 years
- **Deadline to apply :** 2025-07-31

Contacts

- **Inria Team :** MAGNET
- **Recruiter :**
  Tommasi Marc / Marc.Tommasi@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.