



Offer #2024-07267

Post-Doctoral Research Visit F/M Postdoctoral position on Theory of Reinforcement Learning and Bandits under structures and constraints

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

Level of experience : Up to 3 years

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

In his/her journey of postdoc, the candidate will be supported by [ANR JCJC project REPUBLIC](#), and supervised by [Debabrota Basu](#). Debabrota is affiliated with the [Scool](#) project-team (previously [Sequel](#)) of Inria Centre at University of Lille. As a team, Scool is internationally recognised for developing theories and algorithms for sequential learning and decision making, i.e. in the fields of bandits and reinforcement learning.

The candidate is expected to work on understanding impact of different types of constraints and structures on the performance and design of bandit and RL algorithms.

The project is expected to simulate the existing and new collaborations with researchers and groups working on responsible AI, bandits, and reinforcement learning. The candidate will also be part of the [HumAI alliance](#) that aims toward studying humane impact of deploying AI.

From the application point of view, Scool is involved in multiple projects that incorporates medical data, agricultural data, and e-commerce. Depending on the future development, we will be interested to deploy such responsible AI systems and algorithms for securing such applications.

Assignment

To be specific, the postdoc will first investigate the fundamental question of reinforcement learning and bandits under non-linear and dynamic constraints and then work in tandem with the PhD working on the related topic to develop constrained RL formulations for robustness, privacy, and unbiasedness sequential decision making and adaptive testing. For further details, please contact Debabrota by email.

Main activities

All research activities, that is bibliographical search, proposing original ideas related to the topic of the Ph.D. and developing them, presenting the work in the Scool seminar, workshops and conferences. Writing papers in order to get them accepted in the best conferences and journals of our field of research (e.g. ICML, NeurIPS, COLT, IJCAI, AAAI, JMLR). Since the work involves and impacts the responsible AI in general, the successful candidate should collaborate in writing scientific articles aiming towards the larger audience.

Skills

The candidate should preferably have the following skills:

- A strong background in mathematics/statistics

- A good knowledge of machine learning, reinforcement learning, statistics, and algorithms
- Broad interest for responsible and trustworthy AI
- Knowledge of programming languages such as Python, C/C++
- Some experience with implementation and experimentation (a plus)
- A good command of English

Please follow the instructions given in <https://team.inria.fr/magnet/how-to-apply/> to set up your application file.

In brief, the application of the candidate should include his/her CV, an application letter, (two or more) recommendation letters, and the school transcripts. It is recommended that the candidate contacts Debabrota while preparing the application.

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

Gross monthly salary : 2788 €

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** : 2024-09-01
- **Duration of contract** : 7 months
- **Deadline to apply** : 2024-08-01

Contacts

- **Inria Team** : [SC00L](#)
- **Recruiter** :
Basu Debabrota / debabrota.basu@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

A successful candidate should:

- collaborate inside the team, and with the external researchers and engineers if needed
- organise the work systematically
- be keen to learn new theory and algorithms developed in the fast-changing field of reinforcement learning and bandits
- engage in meetings and discussions regularly

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.