

2020-03209 - Post-Doctoral Research Visit F/M Causal explanations in reinforcement learning

Contract type : Civil Servants Mobility (EU) or 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 Lille - Nord Europe Research Center was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Hauts-De-France région, the Inria Lille - Nord Europe Research Center undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Center is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

Context

Project CausalXRL is a publicly funded collaborative project research problem. CausalXRL is gathering the dpt. of computer science of U. Sheffield, the faculty of computer science of U. Vienna, and Inria/Scool team.

The recruitee will be based in Scool group, in Villeneuve d'Ascq in France. As part of the project, he/she will regularly travel and meet people in Sheffield and Vienna. He/She will also participate to scientific events, such as scientific conferences.

Reinforcement learning is today a well developed field of research, enjoying significant applications. Its most well-known applications are related to learning to play games and become expert in playing Backgammon (1994), Atari video-games (2013), and go and other board games (2017). However spectacular, RL successes have been obtained in applications in which the environment may be simulated, and the agent may be trained over billions of trials, sometimes over months, on large scale computing infrastructures for the most recent ones. When one departs from these comfortable applications, RL faces many challenges. Among others, RL faces the challenge also faced by other deep learning applications, that of being able to explain what it does, or to provide human beings with information about what it does and how it achieves its prediction. This is the well-known "explanability" challenge. In the CausalXRL project, we wish to investigate the use of causality to let an RL be able to explain what it does, or let human beings understand how and why it performs.

Assignment

The recruitee will collaborate with the project partner groups for the purpose of making scientific progress in the field of causal explainable reinforcement learning, fundamental research and its application.

Main activities

The recruitee will perform standard research activities, involving reading scientific publications, proposing new ideas related to the project, arguing, developing them, presenting them informally to partners, and also through seminars and research group meetings, writing scientific publications and submit them to top conference and journals of the field.

Skills

Technical skills and level required: proficiency in python, pytorch, machine learning packages. Skills in C/C++ will also be appreciated.

Everything will be implemented in Linux/Ubuntu, in an open source software state of mind.

Ability to work, interact, and collaborate with other researchers (in English)

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 (after 6 months of employment) 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

Depending on profile and experience, between 35 k€ and 43 k€ gross per year

General Information

- **Theme/Domain :** Optimization, machine learning and statistical methods Statistics (Big data) (BAP E)
- **Town/city :** Villeneuve d'Ascq
- **Inria Center :** CRI Lille - Nord Europe
- **Starting date :** 2021-07-01
- **Duration of contract :** 3 years
- **Deadline to apply :** 2021-05-31

Contacts

- **Inria Team :** SC00L
- **Recruiter :**
Preux Philippe / Philippe.Preux@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

You want to push forward the limits of knowledge in the field of explainable reinforcement learning.

You are hard working, dedicated to your research.

You love working on fundamental ideas and demonstrating them experimentally, and then reporting your work in well-polished publications.

You really enjoy working with other researchers, sharing and discussing ideas.

You are rigorous, serious and reliable in your work.

Instruction to apply

Application deadline: 31/05/2021

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.

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.

