



Offer #2024-07698

Post-Doctoral Research Visit F/M [POSTDOC2024-PREMEDICAL] Broadening the use of bilevel optimization in machine learning

Contract type : Fixed-term contract

Renewable contract : Yes

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria centre at Université Côte d'Azur includes 37 research teams and 8 support services. The centre's staff (about 500 people) is made up of scientists of different nationalities, engineers, technicians and administrative staff. The teams are mainly located on the university campuses of Sophia Antipolis and Nice as well as Montpellier, in close collaboration with research and higher education laboratories and establishments (Université Côte d'Azur, CNRS, INRAE, INSERM ...), but also with the regional economic players.

With a presence in the fields of computational neuroscience and biology, data science and modeling, software engineering and certification, as well as collaborative robotics, the Inria Centre at Université Côte d'Azur is a major player in terms of scientific excellence through its results and collaborations at both European and international levels.

Context

The hired postdoc will join PreMeDICaL, an Inria/Inserm research team based in Montpellier (France), and will be jointly supervised by Aurélien Bellet and Julie Josse. PreMeDICaL specializes in developing precision medicine methods through causal learning and federated learning, while ensuring the confidentiality of medical data. The team is composed of researchers in statistics, machine learning, AI, as well as clinicians, and aims to bridge the gap between fundamental research and its effective use in healthcare. Through his/her research, the hired postdoc will contribute to the research axes "Personalized medicine by integration of different data sources" and "Personalized medicine with privacy and fairness guarantees".

Assignment

Bilevel optimization has recently witnessed significant advancements with the development of efficient general-purpose algorithms with proven convergence properties. This postdoc aims to explore how these techniques can offer novel and provably effective solutions to challenging machine learning tasks that can be framed as bilevel optimization problems. Emphasis will be placed on leveraging these methodologies for privacy-preserving and fair machine learning, as well as for learning on data with missing values.

See detailed topic here: http://researchers.lille.inria.fr/abellet/jobs/postdoc_bilevel_premedical.pdf

Main activities

See http://researchers.lille.inria.fr/abellet/jobs/postdoc_bilevel_premedical.pdf

Skills

The applicant must hold a PhD in machine learning, optimization or related fields. She/he is expected to have strong mathematical skills (e.g., numerical optimization, probability, statistics, linear algebra). Some knowledge in bilevel optimization, trustworthy machine learning and/or missing values is 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
- Contribution to mutual insurance (subject to conditions)

Remuneration

Duration: 18 months
Location: Sophia Antipolis, France
Gross Salary per month: 2788€ brut per month

General Information

- **Theme/Domain** : Optimization, machine learning and statistical methods
Statistics (Big data) (BAP E)
- **Town/city** : Montpellier
- **Inria Center** : [Centre Inria d'Université Côte d'Azur](#)
- **Starting date** : 2024-10-01
- **Duration of contract** : 1 year, 4 months
- **Deadline to apply** : 2024-06-26

Contacts

- **Inria Team** : [PREMEDICAL](#)
- **Recruiter** :
Bellet Aurelien / aurelien.bellet@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

Before applying, it is strongly recommended that you contact the Scientific manager beforehand.

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.