



Offre n°2024-07889

Post-Doctoral Research Visit F/M Policy learning under distributional shifts

Le descriptif de l'offre ci-dessous est en Anglais

Type de contrat : CDD

Niveau de diplôme exigé : Thèse ou équivalent

Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

The Inria centre at Université Côte d'Azur includes 42 research teams and 9 support services. The center'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.

Mission confiée

Assignments :

With the help of [Julie Josse](#), the recruited person will be taken to conduct innovative research on causal inference.

For a better knowledge of the proposed research subject :

A state of the art, bibliography and scientific references are available at the following URL, do not hesitate to log in the [Premedical website](#)

Collaboration :

The recruited person will be in connection with Aurelien Bellet, Research Director at Inria Montpellier.

The recruited person will be part of the PEPR SMATCH (Statistical and AI based Methods for Advanced Clinical Trials CHallenges in Digital Health) in digital health and will benefit from this network. In particular, he/she will be part of workpackage 2: Enriching clinical trials with multi-sources and multidimensional auxiliary data. The aim is to develop the next generation of methods to combine high-throughput, high-dimensional individual and ancillary data in clinical trials and to evaluate their benefit.

Responsibilities :

The person recruited is responsible for developing methods of data integration in the context of causal inference and will take initiatives for studying statistical properties of policy learning methods under distributional shifts.

Principales activités

The inclusion/exclusion criteria of an RCT are closely tied to its ability to reach useful conclusions: across an overly heterogeneous group will kill statistical power on the average effect, but an overly homogeneous group risks misrepresenting the target population. Data fusion, drawing the link between the RCT and individuals outside the trial (Colnet et al. 2021), can address both these problems, in particular by estimating heterogeneous effects, rather than concluding on the average effects. The objective of this project is to use machine-learning methods to estimate heterogeneous effects from an RCT leveraging external data to increase statistical power. This project will provide concrete procedures and recommendations. A theoretical and numerical study will conclude on the finite-sample bias and variance of various machine-learning methods to estimate the CATE (conditional average treatment effect). The same methodology will be applied for time-to-event data. More precisely, we will go through the following steps

- Developing transportability estimators for policy learning and studying their statistical properties (asymptotic and finite sample) in particular with different subsets of variables
- Incorporate a temporal aspects and study dynamic treatment regimes
- Testing the suggested methods using numerical simulations and clinical data

In terms of concrete applications, PreMeDICaL has ongoing collaborations with hospitals and other clinical partners. These collaborations will provide opportunities to apply the approaches developed during the Postdoc to concrete use-cases.

Compétences

Technical skills and level required : PhD in Statistics, Machine Learning, biostatistics or related fields. Strong statistical computing skill.

Languages : English, French

Relational skills : Excellent writing and communication skills

Avantages

- 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)

Rémunération

Gross Salary: 2788 € per month

Informations générales

- **Thème/Domaine** : Neurosciences et médecine numériques
Statistiques (Big data) (BAP E)
- **Ville** : Montpellier
- **Centre Inria** : [Centre Inria d'Université Côte d'Azur](#)
- **Date de prise de fonction souhaitée** : 2024-10-01
- **Durée de contrat** : 2 ans
- **Date limite pour postuler** : 2024-07-23

Contacts

- **Équipe Inria** : [PREMEDICAL](#)
- **Recruteur** :
Josse Julie / julie.josse@inria.fr

A propos d'Inria

Inria est l'institut national de recherche dédié aux sciences et technologies du numérique. Il emploie 2600 personnes. Ses 215 équipes-projets agiles, en général communes avec des partenaires académiques, impliquent plus de 3900 scientifiques pour relever les défis du numérique, souvent à l'interface d'autres disciplines. L'institut fait appel à de nombreux talents dans plus d'une quarantaine de métiers différents. 900 personnels d'appui à la recherche et à l'innovation contribuent à faire émerger et grandir des projets scientifiques ou entrepreneuriaux qui impactent le monde. Inria travaille avec de nombreuses entreprises et a accompagné la création de plus de 200 start-up. L'institut s'efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

We are looking for excellent candidates, highly motivated, with background knowledge in mathematics, statistics /machine learning and potentially interested by research motivated by health applications.

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des

Consignes pour postuler

Sécurité défense :

Ce poste est susceptible d'être affecté dans une zone à régime restrictif (ZRR), telle que définie dans le décret n°2011-1425 relatif à la protection du potentiel scientifique et technique de la nation (PPST). L'autorisation d'accès à une zone est délivrée par le chef d'établissement, après avis ministériel favorable, tel que défini dans l'arrêté du 03 juillet 2012, relatif à la PPST. Un avis ministériel défavorable pour un poste affecté dans une ZRR aurait pour conséquence l'annulation du recrutement.

Politique de recrutement :

Dans le cadre de sa politique diversité, tous les postes Inria sont accessibles aux personnes en situation de handicap.