Offre n°2024-07886

Mechanistic learning of the natural history of lung cancer

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

Niveau de diplôme exigé : Bac + 5 ou équivalent

Fonction : Stagiaire de l'ingénierie

Niveau d'expérience souhaité : Jeune diplômé

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.

Contexte et atouts du poste

This PhD position will take place in the environment of the Inria-Inserm team COMPO (COMputational Pharmacology in Oncology), located in the La Timone health campus. The team is composed of mathematicians, data scientists, pharmacists and clinicians and is a unique multidisciplinary environment focused on developing novel computational tools for decision-making in clinical oncology.

The PhD student will join a national consortium in the context of the LUCA-pi (lung cancer prevention and intervention) national RHU project (30M€ with 10M€ from the French national research agency) consisting of:

- AP-HM (univerty hospitals of Marseille, Pr D. Boulate)
- Gustave Roussy Institute (Pr L. Zitvogel and Pr G. Kroemer)
- Center for Immunology of Marseille (P. Milpied)
- Inria – Inserm COMPO

The objective is to develop a mechanistic mathematical model of the lung cancer national history and combine it with machine learning algorithms to predict a localized, early-stage lung cancer or the post-surgery metastatic relapse.

The PhD will be supervised by a mathematician/data scientist (Dr S. Benzekry, head of COMPO) and a thoracic surgeon (Pr D. Boulate, PI of the LUCA-pi project).

Mission confiée

Data

The project builds on already existing databases and ongoing prospective projects integrating high dimension clinical, imaging and biological longitudinal phenotyping. The PREVALUNG, PREVALUNG ETOILE and PREVALUNG BIOCEPTION are 3 intertwined projects respectively funded by the National Institute against cancer (INCa), Aix-Marseille University Fundation for Excellence (A*midex) and the European commission (PREVAUNG EU, Horizon Europe Program). The PREVALUNG studies are recruiting 2750 participants with 3 rounds of lung cancer screening including baseline and longitudinal multimonal phenotyping.

Principales activités

Main activities:

- Review of the literature
- Benchmark of existing methods
- Development of novel "mechanistic learning" algorithms
- Interactions with the biological and clinical partners
- Writing scientific publications

Additional activities:

- Continuous integration / continuous deployment of the code
- Data visualization
- Statistical reporting to the partners

Compétences

Technical skills and level required :

- Excellent programming skills in a scripting language (R and/or Python)
- Strong background in statistics and machine learning
- Hands-on experience with real-world data analysis
- Ideally, experience in mixed-effects modeling
- Experience in computer vision is a plus
- Strong motivation for medical and societal applications of computational methods
- Knowledge of biology and/or medicine is a plus
- Ability to work both independently and as a team, good relational skills

Additional:

- English speaking
- Intermediate academic writing skills
- Intermediate oral presentation 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 per month: 2100€ brut per month (year 1 & 2) and 2190€ brut per month (year 3)

Informations générales

- **Thème/Domaine :** Neurosciences et médecine numériques
  Biologie et santé, Sciences de la vie et de la terre (BAP A)
- **Ville :** Marseille
- **Centre Inria :** Centre Inria d'Université Côte d'Azur
- **Date de prise de fonction souhaitée :** 2024-02-01
- **Durée de contrat :** 6 mois
- **Date limite pour postuler :** 2024-07-23

Contacts

- **Équipe Inria :** COMPO
- **Recruteur :**
  Benzekry Sebastien / Sebastien.Benzekry@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

You don't just apply the reference method to a given problem; instead, you are eager to thoroughly understand the information contained in the data.

Attention: Les candidatures doivent être déposées en ligne sur le site Inria. Le traitement des candidatures adressées par d'autres canaux n'est pas garanti.

Consignes pour postuler

Applications must be submitted online on the Inria website. Collecting applications by other channels is not guaranteed.

The position is open to:
- Inria internal mobility, remuneration according to statutory conditions
- mobility from other public body, by posting for a period of three years, renewable, remuneration according to statutory conditions
- in short term contract from service fixed-term

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.