Offer #2024-08168

Post-Doctoral Research Visit F/M Exploring Variability in Medical Image Segmentation: New Metrics and Frameworks

Contract type : Fixed-term contract

Level of qualifications required : PhD or equivalent

Fonction : Post-Doctoral Research Visit

About the research centre or Inria department

The Inria center 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.

Context

This postdoctoral position is part of the MEDITWIN project, a major French national initiative focused on exploring how virtual twins can enhance the quality of healthcare, making it safer and more accessible to all. MEDITWIN will enable healthcare professionals to simulate potential future scenarios for individual patients, offering new possibilities for personalized treatment and care.

The project combines both fundamental research and applied development, focusing on the creation, customization, and practical use of virtual twins in healthcare settings.

Assignment

The aim of the postdoctoral project is to develop innovative methodologies for assessing the quality of anatomical structure or pathology reconstructions from medical images. A critical but often overlooked issue in this domain is the inter- and intra-rater variability in image segmentation, which complicates the quantitative evaluation of segmentation algorithms beyond commonly used metrics like the Dice score or Hausdorff distance.

This project seeks to explore statistical frameworks that introduce novel segmentation metrics, particularly in cases involving multiple reference segmentations. The effectiveness of these metrics will be evaluated through several practical applications, providing a more robust means of performance assessment in medical image analysis.

Main activities

Main activities (5 maximum) : propose new statistical frameworks, evaluate them on existing databases, write scientific papers, co-supervise students

Skills

- strong experience in statistical learning, and biomedical imaging are required
- Solid programming and IT skills are necessary (Python or C++, bash scripting).

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

Gross Salary : 2788 € per month

General Information

- **Theme/Domain** : Computational Neuroscience and Medicine
  Statistics (Big data) (BAP E)
- **Town/city** : Sophia Antipolis
- **Inria Center** : [Centre Inria d'Université Côte d'Azur](#)
- **Starting date** : 2024-11-01
- **Duration of contract** : 2 years
- **Deadline to apply** : 2024-10-31

Contacts

- **Inria Team** : [EPIONE](#)
- **Recruiter** :
  Delingette Hervé / Herve.Delingette@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

- Strong communication skills with fluent English (written and spoken)

> **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

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

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.