Inria

Offer #2024-08175

Research Engineer for AI project in prostate cancer analysis from medical images

Level of qualifications required : Graduate degree or equivalent

Fonction : Temporary scientific engineer

Level of experience : Recently graduated

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 position takes place within the French national AICOO project, which brings together several innovative companies and both public and private clinical centers.

The AICOO project focuses on the analysis of multiparametric MRI images of the prostate. Inria's role in the project is to develop artificial intelligence (AI) capable of analyzing and interpreting MRI images in order to improve the diagnosis and monitoring of patients with prostate cancer.

Indeed, prostate cancer is one of the most common cancers affecting men in developed countries. Multiparametric Magnetic Resonance Imaging (mp-MRI), which involves the combined analysis of multiple MR sequences, is now regarded as the most accurate imaging method for detecting prostate cancer. However, a significant barrier to its widespread use as a diagnostic tool is the extensive training required for radiologists to perform accurate analyses.

This challenge has driven the development of decision support systems to assist radiologists in detecting, characterizing, and monitoring prostate cancer lesions.

Assignment

- **AI algorithm development**: Participate in the design, implementation and optimization of image processing and machine learning algorithms to analyze multiparametric MRI images (T2, DWI, ADC, etc.).
- **Data collection and structuring**: Ensure the generation, structuring and quality control of MRI image databases and associated clinical annotations.
- **Research and development**: Participate in research on the latest techniques in artificial intelligence (deep learning, convolutional neural networks, etc.) and propose innovative solutions to address medical image analysis issues.
- **Clinical validation**: Collaborate closely with clinicians (radiologists, urologists, etc.) to validate the results of the models developed and ensure their clinical relevance.
- **Documentation and scientific communication**: Document research results, participate in the writing of scientific articles.

Main activities

Main activities (5 maximum) :Design experimental platforms, Write documentation, Test until validation, Present the works' progress to partners, Analyse the requirements of partners

Skills

- **Expertise in artificial intelligence techniques:** Expertise in machine learning and deep learning,

particularly in the field of image processing (neural networks, segmentation, classification, anomaly detection, etc.).
- **Programming skills:** Mastery of programming languages □□such as Python, as well as AI libraries and frameworks (TensorFlow, Keras, PyTorch, etc.).
- **Knowledge of medical imaging:** Knowledge of medical image formats (DICOM) and the specificities of multiparametric prostate MRI.
- **Ability to process massive data**: Experience in handling large databases, data pipeline management, and image preprocessing.
- **Research spirit**: Ability to conduct bibliographic research, propose solutions

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

From 2692 € gross monthly (according to degree and experience)

General Information

- **Theme/Domain :** Computational Neuroscience and Medicine
  Software Experimental platforms (BAP E)
- **Town/city :** Sophia Antipolis
- **Inria Center :** Centre Inria d'Université Côte d'Azur
- **Starting date :** 2024-12-01
- **Duration of contract :** 2 years, 6 months
- **Deadline to apply :** 2024-11-30

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.

> **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

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.