



Offer #2025-08911

Post-Doctoral Research Visit F/M Developing Lightweight Neural Network Architectures for Enhanced AI in Hospital Settings

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 42 research teams and 9 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 project aims to create novel lightweight neural network architectures specifically designed to improve the use of artificial intelligence (AI) in critical healthcare settings, such as hospitals. The ultimate goal is to enhance medical imaging and analysis capabilities, as well as adapt AI models to diverse data types like text and biological data.

By collaborating with the Centre Antoine Lacassagne of Nice, we will gain access to clinical expertise and a wealth of heterogeneous data, facilitating the development of more accurate and robust AI solutions. The project's focus on image segmentation and domain adaptation will enable the integration of full body PET/CT imaging data with healthcare records and biological information.

Assignment

Our approach will involve designing and implementing lightweight neural network architectures that can efficiently process complex medical data while maintaining computational efficiency. We will draw upon a range of techniques, including transfer learning, knowledge distillation, and neural cellular automata, to create models that are not only effective but also scalable and interpretable.

Our development process will prioritize the production of high-quality analysis outputs, ensuring that our findings are actionable and provide tangible value to healthcare professionals. We will maintain an iterative approach, refining our models and techniques as needed to address emerging challenges and refine our results.

Main activities

- Conduct research and development of novel lightweight neural network architectures for medical image analysis, such as image segmentation, object detection, and image classification
- Develop and optimize algorithms for medical image processing, including image denoising, image enhancement, and image registration, using lightweight neural networks
- Collaborate with clinicians and radiologists to collect and annotate large datasets of medical images, and to validate the performance of developed models in real-world hospital settings
- Implement and test models on various hardware platforms, including GPUs, CPUs, and specialized AI accelerators, to ensure efficient deployment in hospital settings
- Develop and maintain software tools and libraries for medical image analysis, including data preprocessing, model training, and model evaluation
- Publish research findings in top-tier conferences and journals, and present results at international conferences and workshops
- Participate in the development of grant proposals and research funding applications to support ongoing research activities
- Supervise and mentor graduate students and junior researchers in the development of their research projects and skills

Skills

- Strong background in statistical and deep learning
- Experience with medical image analysis, including image segmentation, object detection, and image classification
- Proficiency in programming languages such as Python
- Familiarity with deep learning frameworks such as TensorFlow, PyTorch, and Keras
- Experience with medical imaging software and libraries, including ITK, 3D Slicer, and scikit-image
- Knowledge of image processing techniques, including image denoising, image enhancement, and image registration
- Understanding of computer vision and machine learning concepts, including feature extraction, object recognition, and pattern classification
- Experience with model optimization techniques, including pruning, quantization, and knowledge distillation
- Familiarity with hardware platforms, including GPUs, CPUs, and specialized AI accelerators
- Strong understanding of data structures and algorithms, including data preprocessing, model training, and model evaluation
- Strong analytical and problem-solving skills, including the ability to design and implement experiments, and to analyze and interpret results
- Excellent communication and collaboration skills, including the ability to work with clinicians, radiologists, and other researchers
- Experience with version control systems, including Git and GitHub
- Experience with writing and publishing research papers, including the ability to prepare and submit manuscripts to top-tier conferences and journals.

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 (after 6 months of employment) 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
- Social security coverage

Remuneration

Gross Salary: 2788 € per month

General Information

- **Theme/Domain** : Computational Neuroscience and Medicine
Biologie et santé, Sciences de la vie et de la terre (BAP A)
- **Town/city** : Sophia Antipolis
- **Inria Center** : [Centre Inria d'Université Côte d'Azur](#)
- **Starting date** : 2025-07-01
- **Duration of contract** : 1 year, 10 months
- **Deadline to apply** : 2025-06-13

Contacts

- **Inria Team** : [EPIONE](#)
- **Recruiter** :
Lorenzi Marco / Marco.Lorenzi@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

The ideal candidate for this project would possess a strong background in computer science, electrical engineering, or a related field, with a focus on machine and statistical learning. A Ph.D. in one of these fields, combined with experience in medical image analysis, including image segmentation, object detection, and image classification, would be highly desirable.

A strong analytical and problem-solving mindset would be crucial for this role, including the ability to design and implement experiments, and to analyze and

interpret results. Excellent communication and collaboration skills would also be necessary, as the collaborator would need to work closely with cross-functional teams, including clinicians and radiologists, to collect and annotate large datasets of medical images.

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

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.