Offre n°2025-08911

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

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

Type de contrat : CDD

Contrat renouvelable : Oui

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 centre's staff (about 500 people) is made up of scientists of di?erent 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 regiona 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

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.

Mission confiée

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.

Principales activités

- 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

Compétences

- 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.

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 (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

Rémunération

Gross Salary: 2788 € per month

Informations générales

- **Thème/Domaine :** Neurosciences et médecine numériques
  Biologie et santé, Sciences de la vie et de la terre (BAP A)
- **Ville :** Sophia Antipolis
- **Centre Inria :** Centre Inria d'Université Côte d'Azur
- **Date de prise de fonction souhaitée :** 2025-07-01
- **Durée de contrat :** 1 an, 10 mois
- **Date limite pour postuler :** 2025-06-13

Contacts

- **Équipe Inria :** EPIONE
- **Recruteur :**
  Lorenzi Marco / Marco.Lorenzi@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'e?orce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l'économie.

L'essentiel pour réussir

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.

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

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.