Offre n°2025-09195

PhD Position F/M Geometrically-aware Vision Foundation Models

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

Type de contrat : CDD

Niveau de diplôme exigé : Bac + 5 ou équivalent

Fonction : Doctorant

A propos du centre ou de la direction fonctionnelle

The Inria Saclay-Île-de-France Research Centre was established in 2008. It has developed as part of the Saclay site in partnership with **Paris-Saclay University** and with the **Institut Polytechnique de Paris** .

The centre has 40 **project teams** , 27 of which operate jointly with Paris-Saclay University and the Institut Polytechnique de Paris; Its activities occupy over 600 people, scientists and research and innovation support staff, including 44 different nationalities.

Contexte et atouts du poste

Within the framework of a partnership (you can choose between)

- not applicable,
- collaboration between 2 Inria teams: *****,
- collaboration ({team_Inria} and the start-up *****,
- project/programme/European fund *****,
- public with {French National Research Agency (ANR), local and regional authorities, academic partners, *****]
- value-creation and technology transfer contracts with *****

a package/model/prototype/application/interface/infrastructure/other specify ***
more specifically dedicated to *****.**

Is regular travel foreseen for this post ? "Do not hesitate to make this known and to ensure that "travel expenses are covered within the limits of the scale in force".

Mission confiée

The recent advent of large deep learning methods has brought tremendous progress in a broad range of Computer Vision tasks, such as image representation and generation. Robustness and generalisation, however, remain important challenges, as these models still lag behind human visual perception and understanding. Notably, humans excel at adapting to new environments and challenging perceptual conditions. Meanwhile, despite being trained on vast amounts of data, vision models often struggle with new objects or scenes. This limits their adaptation to real-world applications. A critical difference lies in the fact that humans benefit from evolving in and interacting with a 3D environment endowed with a rich structure that images lack. In particular, shapes are known to play a key role in human perception.

This project aims to bridge the gap between human and machine perception by leveraging geometric structure and incorporating it into vision models. We will explore ways in which such information can be combined with extensive data-driven priors extracted from large image databases. One possibility is to encapsulate geometric information through inductive biases in the model architectures or, alternatively, by promoting geometric awareness through post-training fine-tuning methods. Finding computationally efficient, scalable, and robust methods to transfer geometric structure from shapes to models that operate on images will be an important goal of this thesis. Applications of geometrically-aware vision models are numerous, including asset generation, structured world modelling, and 3D scene reconstruction and understanding from images. This project will also explore applications and study the role of geometric priors in these contexts.

Principales activités

- Develop novel approaches
- Prepare publications in top-venues (CVPR, ICCV, NeurIPS, SIGGRAPH, etc.)
- Present your work at conferences
- Prepare a dissertation

Compétences

Technical skills and level required :

Languages :

Relational skills :

Other valued appreciated :

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
- Social security coverage

Rémunération

Monthly gross salary : 2.200 euros

Informations générales

- **Thème/Domaine :** Vision, perception et interprétation multimedia
  Systèmes d'information (BAP E)
- **Ville :** Palaiseau
- **Centre Inria :** Centre Inria de Saclay
- **Date de prise de fonction souhaitée :** 2025-09-01
- **Durée de contrat :** 3 ans
- **Date limite pour postuler :** 2025-09-28

Contacts

- **Équipe Inria :** GEOMERIX
- **Directeur de thèse :**
  Ovsjanikovs Maksims / maksim.ovsjanikov@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

There you can provide a "broad outline" of the collaborator you are looking for what you consider to be necessary and sufficient, and which may combine :

- tastes and appetencies,
- area of excellence,
- personality or character traits,
- cross-disciplinary knowledge and expertise...

This section enables the more formal list of skills to be completed and 'lightened' (reduced) :

- "Essential qualities in order to fulfil this assignment are feeling at ease in an environment of scientific dynamics and wanting to learn and listen."
- " Passionate about innovation, with expertise in Ruby on Rails development and strong influencing skills. A thesis in the field of **** is a real asset."

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.