Offre n°2025-08834

Post-Doctoral Research Visit F/M [DRI Campaign] Postdoctoral Position: Adaptive Input for Digital Fabrication and Design

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

Type de contrat : CDD

Niveau de diplôme exigé : Thèse ou équivalent

Fonction : Post-Doctorant

A propos du centre ou de la direction fonctionnelle

Created in 2008, the Inria center at the University of Lille employs 360 people, including 305 scientists in 15 research teams. Recognized for its strong involvement in the socio-economic development of the Hauts-De-France region, the Inria center at the University of Lille maintains a close relationship with large companies and SMEs. By fostering synergies between researchers and industry, Inria contributes to the transfer of skills and expertise in the field of digital technologies, and provides access to the best of European and international research for the benefit of innovation and businesses, particularly in the region.

For over 10 years, the Inria center at the University of Lille has been at the heart of Lille's university and scientific ecosystem, as well as at the heart of Frenchtech, with a technology showroom based on avenue de Bretagne in Lille, on the EuraTechnologies site of economic excellence dedicated to information and communication technologies (ICT).

Contexte et atouts du poste

This position is part of the **INPUT Associate Team**, a collaborative research effort between Inria Lille's LOKI team and the University of Waterloo's HCI group, focused on rethinking how interactive systems handle user input: from sensing and filtering to processing and transforming in real time.

This postdoc will focus on applying these design objectives to **digital fabrication and design tools**, such as **interactive fabrication systems**, **CAD environments**, and **AI-assisted modeling workflows**. The position aligns with LOKI's broader research on interaction dynamics and human-centered design technologies, with an emphasis on precision, adaptivity, and real-time control.

The successful candidate will work on core challenges of **manual input pipelines**, **digital tool controls**, and **context-aware intent prediction**, contributing to new systems that support expert and novice users in **designing, prototyping, and fabricating artifacts** through digital or hybrid digital-physical processes.

Research will take place at Inria Lille with potential research stays at the University of Waterloo, supported through the Associate Team.

Mission confiée

We seek a postdoctoral researcher interested in exploring **adaptive input pipelines** for software and systems used in digital fabrication. This includes real-time sensing and processing of user input in tools that support:

- **Interactive fabrication** or **semi-automated fabrication**
- **CAD and 3D modeling,** including **AI-assisted modeling and generative design**
- **Augmented reality modeling and in-situ model visualization**

Your work will contribute to re-design how such tools capture, interpret, and respond to user input to support **precision, expressivity, and collaboration**. Your work will expand insights into input pipelines and refine technologies that are part of the INPUT project.

Principales activités

Possible research directions include:

- **Adaptive filtering and control of user input** in fabrication tasks, such as digital motion control tools, gesture input, or tracking data of manually moved physical items.
- **Sensor signal processing and calibration techniques** for hybrid fabrication environments that combine physical tools, motion tracking, and digital controllers.

- **Predictive input systems** that anticipate user motion based on design intent to compensate for noisy analog to digital transformation of sensing signals, in support of semi-autonomous tool behavior.
- **Interactive systems for AI-assisted making**, where human and machine jointly contribute to the creation of physical artifacts.
- **Human-in-the-loop modeling tools** that let users refine or override automated suggestions in real time, supported by responsive input systems.
- **Design of new input techniques** tailored to creative or fabrication-specific workflows, including tangible, spatial, and AR-assisted interactions.

Compétences

Required:

- PhD in Human-Computer Interaction, or a related field (defended after Sept 1, 2022).
- Demonstrated research experience in one or more of: digital fabrication, interactive systems,
- CAD software, physical computing, or human-AI collaboration in design.
- Strong programming skills (e.g., JavaScript, C++, Python, Unity, or embedded systems).
- Familiarity with prototyping interactive fabrication and design systems and conducting user studies.
- Experience with fabrication hardware (e.g., 3D printers, laser cutters, etc.).

Preferred:

- Interest in or prior work on creativity support tools, generative design, or mixed-reality interfaces.
- Knowledge of real-time input processing (e.g., filtering, prediction, control theory).

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

Gross salary by month : 2927 €

Informations générales

- **Thème/Domaine :** Interaction et visualisation
  Systèmes d'information (BAP E)
- **Ville :** Villeneuve d'Ascq
- **Centre Inria :** Centre Inria de l'Université de Lille
- **Date de prise de fonction souhaitée :** 2025-11-01
- **Durée de contrat :** 2 ans
- **Date limite pour postuler :** 2025-06-01

Contacts

- **Équipe Inria :** LOKI
- **Recruteur :**
  Casiez Gery / Gery.Casiez@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.

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

- Detailed CV with a description of the PhD and a complete list of publications with the two most significant ones highlighted

- Motivation letter
- 2 letters of recommendations

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.