**2020-02706 - PhD Position F/M Towards a better discoverability of interactions in GUIs**

**Niveau de diplôme exigé :** BAC + 5 ou équivalent  
**Fonction :** Doctorant

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**A propos du centre ou de la direction fonctionnelle**

Le Centre Inria - Nord Europe Research Centre was founded in 2008 and employs a staff of 360, including 300 scientists working in sixteen research teams. Recognised for its outstanding contribution to the socio-economic development of the Hauts-de-France region, the Inria Lille – Nord Europe Research Centre undertakes research in the field of computer science in collaboration with a range of academic, institutional and industrial partners.

The strategy of the Centre is to develop an internationally renowned centre of excellence with a significant impact on the City of Lille and its surrounding area. It works to achieve this by pursuing a range of ambitious research projects in such fields of computer science as the intelligence of data and adaptive software systems. Building on the synergies between research and industry, Inria is a major contributor to skills and technology transfer in the field of computer science.

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**Contexte et atouts du poste**

The Loki research group at Inria (France) is looking for a PhD student starting fall 2020 to work on the design, implementation and evaluation of Discoverable Graphical User Interfaces, funded by the ANR JCJC Discovery Grant. This thesis is also part of an Associated Lab between the Loki research group and the HCI Lab Group of the University of Waterloo (Canada). As such, the selected PhD Candidate will have the opportunity to visit and collaborate with researchers from the HCI Lab Group.

**Mission confiée**

Guidelines for the design of Interactive Systems almost systematically highlight how important it is for a user to be able to “figure out what actions are possible and where and how to perform them” [1], and how, in general, interactive systems should communicate efficiently and effectively their underlying design intent and interactive principles [2]. Despite these guidelines, modern computing systems in practice suffer from a bad discoverability, that is that they do not help users to discover available input mechanisms. This is confirmed by numerous examples of hidden inputs and features that can be found in commercial products [3,4], a trend exacerbated by User-Interfaces that increasingly “disappear” [5].


**Principales activités**

This PhD will investigate the issue of users’ discovery of input mechanisms in gesture-based interactive systems with a focus on the following main objectives:

- Theoretical contribution  
  Little is known regarding which human factors should be leveraged in order to improve the discoverability of input methods. A first goal will therefore be to provide fundamental knowledge on human factors influencing the discoverability of input methods, for instance by producing a comprehensive framework of perceptual factors likely to influence the discovery of input methods in computing systems.

- Technical contribution  
  A second goal will be to propose Graphical User Interface refinements that will foster the discovery of systems’ available features and corresponding input methods. Different types of GUIs can be explored, such as novel type of graphical widgets, reflective interfaces, etc. Similarly, different interaction paradigms, such as touch-based interaction or Augmented Reality settings will be explored.

- Methodological contribution  
  Evaluating the discovery and appropriation of novel interaction techniques remains uncommon and no clear protocols have been proposed in that respect. A third goal will be to establish evaluation methods and tools that can be used to assess the discoverability of input modalities and interaction techniques during laboratory style, online, and "in the wild" experiments.

**Compétences**

A successful candidate must hold a Msc in Human-Computer Interaction (or equivalent), and show a great interest in performing high quality research. He or she must demonstrate experience or strong interest in software development. Creativity, independence, team working and communication skills are valuable advantages. A track record of publications in top-tier HCI venues (such as ACM CHI, UIST, CSCW) is expected, as well as a significant track record of design and implementation of interactive systems and GUIs. It is not required to speak French. A good level of technical and scientific English is also a plus.

**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.)

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**Informations générales**

- Titre/Domaine : Interaction et visualisation  
- Ingénierie logicielle (BAP E)  
- Ville : Villeneuve d’Ascq  
- Centre Inria : CRI Lille - Nord Europe  
- Date de prise de fonction souhaitée : 2020-10-01  
- Durée de contrat : 3 ans  
- Date limite pour postuler : 2020-06-12

**Contacts**

- Equipe Inria : LOKI  
- Directeur de thèse : Malacia Sylvain / sylvain.malacia@inria.fr

**A propos d’Inria**

Inria is the national institute of research dedicated to sciences and technologies of the digital. It employs 2600 personnnes. Its 200 equipes-project agès, in general communes avec des partenaires académiques, impliquent plus de 3500 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 personnnes 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 180 start-up. L’institut s’efforce ainsi de répondre aux enjeux de la transformation numérique de la science, de la société et de l’économie.

**L’essentiel pour réussir**

Candidate must have the following skills:

- Strong programming skills  
- Great scientific writing skills  
- Knowledge of interaction design  
- Experience in experimental design and statistical analysis

**Consignes pour postuler**

CV + application letter + recommendation letters

**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.

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**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.

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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
1st and 2nd year : 1 982€ Gross monthly salary (before taxes)
3rd year : 2 085€ gross monthly salary (before taxes)