Offre n°2020-02419

Doctorant F/H Immersive and Situated Visualizations of Personal Data

Type de contrat : CDD

Niveau de diplôme exigé : Bac + 5 ou équivalent

Fonction : Doctorant

A propos du centre ou de la direction fonctionnelle

This doctoral project will be conducted in the Potioc team at Inria Bordeaux (https://team.inria.fr/potioc/). Potioc designs, develops and evaluates novel approaches that exploit multimodal interaction to promote stimulating user experiences. In particular, we explore approaches based on mixed reality (AR, VR), tangible interaction, brain-computer interfaces, and physiological interfaces. The main areas of application we target are education, well-being, and art.
This PhD proposal is part of a national project (ANR) called EMBER (http://ember.inria.fr/), which involves collaborators at Inria Saclay (Aviz team) and Sorbonne Université (HCI Sorbonne group).

Contexte et atouts du poste

EMBER will study how situated data visualization systems can help people use their personal data (e.g., fitness and physiological data, energy consumption, banking transactions, online social activity,...) for their own benefit. Although personal data is generated in many areas of daily life, it remains underused by individuals. Rarely is personal data subjected to an in-depth analysis and used to inform daily decisions. This research aims to empower individuals to improve their lives by helping them become advanced consumers of their own data.

Mission confiée

In this doctoral project, we will explore how immersive and situated technologies can serve the research objectives of the EMBER project. In particular, we will experiment with see-through head-mounted displays (e.g., Hololens) and spatial augmented reality setups, as these are technological artefacts that can give the impression that the data is really there. With such technologies, both physical and digital data can be visualized in a unified seamless hybrid space. This opens up a range of possibilities that have not been explored yet. Although immersive technology has recently made great advances and has been the subject of an increasing amount of research, there has been little research on how to leverage these technologies for displaying personal data in a situated manner [Jansen et al., 2016] Some early systems exist [White et al., 2007; White and Feiner, 2009; Gervais et al., 2016; Sol Roo et al., 2017], but research remains scattered. Moreover, there has been no attempt at systematically exploring the problem space of situated augmented-reality visualizations of personal data, and there is very little empirical data on the usability and usefulness of those systems.

Principales activités

The challenges linked to this research problem are 1) ensuring a relevant hybridization; 2) exploring visual metaphors; 3) understanding the impact of display modality on perceived realism and situatedness. A primary objective of this research will be to understand which modality is the most appropriate depending on the context.

To tackle these challenges, the PhD candidate will

- conduct a review of immersive technologies in the context of information visualization, and build a dedicated design space.
- design and develop immersive and situated systems, as well as related interaction techniques, for visualizing and interacting with personal data (e.g. physiological)
- design and conduct experimental protocols to evaluate the usability and efficiency of the proposed solutions.

All these activities will be conducted in collaboration with the members of the EMBER project.

Compétences

The candidate should be comfortable with as much following items as possible:

- HCI methodologies
- Information visualization
- Graphics programming and tools such as Unity3D
- AR and VR setups (e.g. Hololens, Spatial Augmented Reality)
- Physiological sensors recording and processing
- Evaluation methods

Avantages

- Subsidized meals
- Partial reimbursement of public transport costs
- 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

- 1982€ / month (before taxs) during the first 2 years
- 2085€ / month (before taxs) during the third year

Informations générales

- **Thème/Domaine :** Interaction et visualisation
  Instrumentation et expérimentation (BAP C)
- **Ville :** Talence
- **Centre Inria :** Centre Inria de l'université de Bordeaux
- **Date de prise de fonction souhaitée :** 2020-09-01
- **Durée de contrat :** 3 ans
- **Date limite pour postuler :** 2020-06-16

Contacts

- **Équipe Inria :** POTIOC
- **Directeur de thèse :**
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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'efforce 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

Thank you to send :
- CV
- Cover letter
- Master marks and ranking
- Support letter(s)

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.