2018-00538 - PhD Position / Interaction with avatars in immersive virtual environments

**Contract type**: Public service fixed-term contract  
**Level of qualifications required**: Graduate degree or equivalent  
**Fonction**: PhD Position

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**Context**

The thesis will be conducted in collaboration between two Inria teams, as part of the AVATAR IPL: **Loki** ([http://loki.lille.inria.fr](http://loki.lille.inria.fr)) at Inria – Lille Nord Europe, and **Potioc** ([https://team.inria.fr/potioc/](https://team.inria.fr/potioc/)) at Inria – Bordeaux Sud Ouest. The candidate will be supervised by Thomas Pietrzak ([thomas.pietrzak@univ-lille.fr](mailto:thomas.pietrzak@univ-lille.fr)), Géry Casiez ([gery.casiez@univ-lille.fr](mailto:gery.casiez@univ-lille.fr)), and Martin Hachet ([martin.hachet@inria.fr](mailto:martin.hachet@inria.fr)).

**Assignment**

Immersive virtual environments gained popularity in the past years although technical limitations used to degrade the immersion sensation and control capabilities. Recent VR headsets are promising technology to improve immersion thanks to better display resolution and head tracking accuracy. They are also shipped with input devices which provide multiple degrees of freedom for performing general purpose interaction tasks, e.g. 3D navigation. Overall, these technical improvements make it possible to study interaction in this kind of environment more effectively and finely.

This thesis is part of the Avatar IPL, which is a combined effort from several Inria teams, with complementary skills: HCI, VR, 3D interaction, Simulations, Image analysis and Image synthesis. The main application domain is immersive cinema, in collaboration with Technicolor.

Our objective within this project is to design and study new interaction techniques and devices that are specifically dedicated to avatar-based interaction. These novel techniques may for example leverage touch interaction and haptic feedback to increase performance and enhance the control of avatars.

**Main activities**

The candidate's work will consist in:

- Studying related work on interaction techniques and devices for 3D immersive environments in general, and dedicated to avatars in particular.
- Identifying interaction tasks specifically related to avatars, and defining an appropriate design space.
- Designing and implementing interaction techniques and devices for 3D immersive environments.
- Designing evaluation protocols and run user studies to measure the benefits of the developed techniques.

**Skills**

Technical skills and level required: 3D programming (Unity3D)  
Languages: English (read and write)  
Relational skills: team work, communication  
Other valued appreciated: electronics, creativity, independance

**Benefits package**

- Subsidised catering service  
- Partially-reimbursed public transport  
- Social security  
- Paid leave  
- Flexible working hours

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**General Information**

- **Theme/Domain**: Interaction and visualization  
- **Town/city**: Villeneuve d’Ascq  
- **Inria Center**: CRI Lille - Nord Europe  
- **Starting date**: 2018-10-01  
- **Duration of contract**: 3 years  
- **Deadline to apply**: 2018-06-30

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**Contacts**

- **Inria Team**: LOKI  
- **Recruiter**: Pietrzak Thomas / thomas.pietrzak@inria.fr

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**The keys to success**

A successful candidate must hold a MSc in computer science or equivalent, and show a great interest in performing high quality research in Human-Computer Interaction. An experience with 3D programming (e.g. Unity3D) would be greatly appreciated. He or she must speak and write English fluently, and experience or strong interest in software and hardware development. Creativity, independence, team working and communication skills are valuable advantages.

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**Conditions for application**

**Defence Security**:  
This position is likely to be situated in a restricted area (ZRR), as defined in Decree No. 2011-1425 relating to the protection of national scientific and technical potential (PPST). Authorisation to enter an area is granted by the director of the unit, following a favourable Ministerial decision, as defined in the decree of 3 July 2012 relating to the PPST. An unfavourable Ministerial decision in respect of a position situated in a ZRR would result in the cancellation of the appointment.

**Recruitment Policy**:  
As part of its diversity policy, all Inria positions are accessible to people with disabilities.

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**Warning**: you must enter your e-mail address in order to save your application to Inria. Applications must be submitted online on the Inria website. Processing of applications sent from other channels is not
• Sports facilities guaranteed.