

# Rêveries

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## Séminaire des doctorants de la SIF le 13 juin, inscriptions prolongées

Chères doctorantes, chers doctorants,

Le 13 juin 2018 aura lieu à l'ENS Ulm à Paris la deuxième édition du Séminaire des Doctorantes et Doctorants en Informatique. Cet événement a pour objectif de rassembler l'ensemble des doctorant.e.s en informatique de France, le temps d'une journée. Au programme, exposés de chercheurs internationaux, exposés de doctorant.e.s, séance posters ainsi que des activités collectives de recherche autour d'énigmes et de jeux.

Cette journée sera l'occasion idéale pour rencontrer et créer des liens avec des jeunes chercheur.euse.s d'autres laboratoires, qui, pour la plupart, deviendront vos futurs collègues ou collaborateur.rice.s. Ce sera également pour vous l'occasion de partager votre savoir et d'étendre votre culture informatique autour de moments conviviaux et enrichissants.

L'Association française de Réalité Virtuelle, Augmentée, Mixte et d'Interaction 3D (AFRV) a vu le jour en novembre 2005. Fondée par une douzaine de chercheurs et de cadres de l'industrie, cette association loi 1901 entend fédérer la communauté française, académique et industrielle, autour de ces thèmes. Plus d'informations sur le site Web : <http://www.af-rv.fr>.

Retrouvez les anciens numéros de rêverie : <http://www.af-rv.fr/index.php/ressources/reveries/>

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Cette initiative est soutenue et financée par la Société Informatique de France. Vous pourrez vous inscrire gratuitement jusqu'au 1er juin 2018 en cliquant sur le lien suivant :

<https://www.eventbrite.fr/e/billets-seminaire-des-doctorantes-et-doctorants-2018-45591415150>

Venez partager vos connaissances ou présenter votre recherche en proposant un poster et/ou un exposé court (de l'ordre de 5min) via Easychair avant le 5 juin :

<https://easychair.org/account/signin.cgi?key=70171468.p93sYOz kf9DeXpsr>

Vous trouverez toutes les informations complémentaires sur la page internet de l'événement :

<http://www.di.ens.fr/seminaire-doctorants-2018>

On vous attend nombreuses, nombreux et motivé.e.s.

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## Graphics Software Engineer for an Inria Startup

Position:

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She/he will be in charge of developing software components for the "PicPlay" startup. PicPlay technology is an Image-Based Rendering approach building on the research results developed by the REVES & GRAPHDECO Inria research teams. The technology is based on 8 years of research, with the following most relevant papers (links include videos) :

\* [www-sop.inria.fr/reves/Basilic/2016/HRDB16/](http://www-sop.inria.fr/reves/Basilic/2016/HRDB16/)

\* [www-sop.inria.fr/reves/Basilic/2015/ODD15/](http://www-sop.inria.fr/reves/Basilic/2015/ODD15/)

\* [www-sop.inria.fr/reves/Basilic/2013/CSD13/](http://www-sop.inria.fr/reves/Basilic/2013/CSD13/)

The position involves developing the software basis for a future product, and in particular creating product-level prototypes for application of these technologies to our client's problems. The successful candidate will participate in the transition from research prototype to market-ready product, building on POCs directly defined by future clients, and will have the option of being a founding partner of the startup.

The engineer will develop C++ libraries and programs using OpenGL and other graphics API's and will create Proofs of Concepts, and demonstration applications, followed by full-blown products.

This is an exciting opportunity to work in a research-oriented environment, and contribute to moving exciting new research from the lab to a high-tech startup with ground-breaking technology.

The startup project has already established contact with several potential clients in different sectors. Please send your CV, letter of motivation and other documentation on qualifications to George dot Drettakis at inria.fr

Qualifications

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\* Motivation for the technology, highly skilled technically and in human relations, able to work alone and in a group.

Required skills :

\* Essential - Programming language : C/C++, Knowledge of Computer

Graphics Development and OpenGL/GLSL

\* Highly desired - Tools : Visual Studio, cmake, git

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\* Desired / appreciated - Unity Engine, C# mono, Unreal Engine, OpenSceneGraph

Education Required:

\* Masters of Science/Engineering in Computer Science or equivalent, specializing in Computer Graphics or Computer Vision.

Work Environment

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The Inria Sophia Antipolis - Méditerranée center has 37 research teams and 9 support departments. The center's staff (about 600 people including 400 Inria employees) is composed of scientists of different nationalities (250 foreigners of 50 nationalities), engineers, technicians and administrators. 1/3 of the staff are civil servants, the others are contractual. The majority of the research teams at the center are located in Sophia Antipolis and Nice in the Alpes-Maritimes. Six teams are based in Montpellier and a team is hosted by the computer science department of the University of Bologna in Italy. The Center is a member of the University and Institution Community (ComUE) "Université Côte d'Azur (UCA)".

Work benefits

- \* Subsidized catering service
- \* Partially-reimbursed public transport
- \* Social security
- \* Paid leave
- \* Flexible working hours
- \* Sports facilities

Salaries follow public service scale dependent on experience.

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## CfP - International Symposium on Mixed and Augmented Reality 2018

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ISMAR 2018

17th IEEE International Symposium on Mixed and Augmented Reality (ISMAR)  
in Munich (Germany)  
October 16-20, 2018  
<http://ismar2018.org/>

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ISMAR 2018, the premier conference for Augmented Reality (AR) and Mixed Reality (MR), will be held in Munich, Germany.

ISMAR is responding to the recent explosion of commercial and research activities related to AR and MR and Virtual Reality (VR) by continuing the expansion of its scope over the past several years. ISMAR 2018 will cover the full range of technologies encompassed by the MR continuum, from interfaces in the real world to fully immersive experiences. This range goes far beyond the traditional definition of AR, which focused on precise 3D tracking, visual display, and real-time performance.

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We specifically invite contributions from areas such as Computer Graphics, Human-Computer Interaction, Psychology, Computer Vision, Optics, and in particular VR, and how these areas contribute to advancing AR / MR / VR technology. The poster session is a fix-point of ISMAR, where the community engages in a discussion about the benefits and challenges of AR in other research and application domains.

This year, we will continue with the previously introduced format for Poster papers allowing for more space. Poster papers will be reviewed on the basis of an extended abstract, which can now be 2-6 pages long and contain smaller contributions or work-in-progress. The page limit also includes the list of references.

Please note that ISMAR does not consider a poster paper of up to 2-pages to be an archival publication. Therefore submitting work in a 2-page poster format does not preclude later submitting the same work in the form of a full paper. And to clarify, poster papers with more than 2 pages will need further scrutiny by ISMAR reviewers to check for added value when submitted as a full paper in later years. ISMAR reviewers are committed to maintaining and enforcing these reviewing principles.

Accepted Poster Papers will be published in the adjunct proceedings of IEEE ISMAR 2018 and will be included in the IEEE Xplore digital library. Poster paper presentation sessions will be organized at the conference. At least one of the authors must register and attend the conference to present the poster.

## **Important Deadlines**

Poster Submission: 29th June, 23:59 AoE (Anywhere on Earth)

Notification for Posters: 23th July

Camera-ready copy: 10th August

Submission Details

Posters papers must follow the "Conference Proceedings" format for which templates (TEX, DOC) are available from the submission guidelines.

All materials must be submitted electronically through the Precision Conference website at: PCS

## **Topics of Interest**

All topics relevant to AR, VR and MR are of interest. Note that VR posters are also welcome regardless of their relevance to AR/MR. Topics include, but are not limited to:

Information Presentation

Mediated and diminished reality

Multisensory rendering, registration, and synchronization

Rendering techniques and methods

Visual, aural, haptic, and olfactory augmentation

Input

Calibration and registration (of sensing systems)

Location sensing technologies of any kind relevant to MR/AR

Projector-camera systems

Sensor fusion

Smart spaces

Touch, tangible and gesture interfaces

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Visual mapping  
Wearable sensors, ambient-device interaction

## Output

Display hardware, including 3D, stereoscopic, and multi-user  
Live video stream augmentation (e.g., in robotics and broadcast)  
Wearable actuators and augmented humans  
Wearable and situated displays (e.g., eyewear, smart watches, pico-projectors)  
User Experience Design  
Collaborative interfaces  
Technology acceptance and social implications  
Therapy and rehabilitation  
Usability studies and experiments  
Virtual analytics and entertainment  
VR simulations of AR/MR  
Human Performance and Perception  
Interaction techniques  
Learning and training  
Multimodal input and output  
Perception of virtual objects  
System Architecture  
Content creation and management  
Distributed and collaborative architectures  
Online services such as AR cloud, shared anchors  
Real-time performance (theaters, projection mapping)  
Scene description and management issues  
Wearable and mobile computing  
Applications  
Architecture  
Art, cultural heritage, education and training  
Automotive and aerospace  
Entertainment, broadcast  
Industrial, emergency response  
Health, wellbeing, and medical  
Personal information systems  
Visual effects / video processing  
Posters Chairs  
Markus Funk, TU Darmstadt, Germany  
Hartmut Seichter, Schmalkalden University of Applied Sciences, Germany

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## PhD proposal – Aeronautic/Neurophysiology/Virtual Reality

Context: the following thesis project has been shortlisted by the Aéronautique and Astronautique doctoral school of Toulouse France (ED AA, <http://edaa.isae.fr/>). We are looking for a serious PhD

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candidate whom we could present for the final selection (file to be completed for the 6th of June, selection following an oral presentation of the candidate the 22nd of June).

Thesis project: Let's have an experience of the mind that will help to understand this thesis project. Read the following question and try to answer as sincerely as possible. Meanwhile, watch what's going on in your mind. Here is the question: "What gift did you give to your spouse / friend for their last birthday?". To answer this question, we need to create a temporary internal mental space to which our attention will focus. Since attention is a limited resource, it cannot focus on both the outside and the inside. This is easily observed because our eyes, at that moment, flee and focus on a neutral zone of space; it is a phenomenon easily

observable in ecological condition. This very specific cognitive process is called the attentional shift<sup>1</sup> (from the outside world to our inner world, or mental world). During this shift and while we are keeping our attention on our mental world, we are almost blind to the outside world. Obviously, this is extremely dangerous when the attention must remain focused on the outside world, as when one is an airplane pilot or air traffic controller. This thesis will specifically study this cognitive moment with three parts:

1 / Evaluate the perceptive capacities of individuals during the attentional shift. Since the hypothesis is that the perceptual capacities are almost zero during a certain period of time, this thesis should make it possible to quantify this duration (our preliminary data suggest that this time may be of several seconds). This hypothesis will be validated through behavioral and functional MRI studies to study the activation of visual areas before, during and after the shift.

2 / Identify physiological markers of this shift so in order to trigger alarms. Our hypothesis is that eye-tracking should allow a good, real time, monitoring of this moment.

3 / Test our assumptions in Virtual Reality (VR) by applying protocols specific to the field of piloting and air traffic control.

Scientific issues: The attentional shift has never been studied in aeronautics despite its potential importance. This study will bring into play several scientific fields: the study of cognitive processes, the massive processing of large amounts of data with the analysis of functional MRIs and finally the virtual reality field.

Aeronautical and societal issues: This thesis will help to better understand this cognitive phenomenon and directly apply the potential results in the field of flight control and air traffic control. For example, new design rules could be defined and thus applied to future HMIs intended for air traffic controllers or pilots. By extension, this work will contribute to all areas where the vigilance of an operator involves security issues.

Expected skills: the candidate is expected to have a background in signal processing, programming and statistics as well as cognitive neuroscience and neuroimaging. Any combination of these will be considered.

<sup>1</sup> [https://en.wikipedia.org/wiki/Attentional\\_shift](https://en.wikipedia.org/wiki/Attentional_shift)

The candidate will have good social and adaptive skills in order to be able to work in two different scientific environments.

Supervision of the PhD candidate will be multidisciplinary and shared among two host laboratories:

- Dr. Christophe Hurter, HDR, professor, head of the group "Interactive data visualization" (DataVis) at ENAC. [christophe.hurter@enac.fr](mailto:christophe.hurter@enac.fr), <http://recherche.enac.fr/~hurter>

- Dr. Emmanuel Barbeau, HDR, CNRS research director, head of the Memory and Learning of Objects and Scenes (MAOS) team at the Centre de recherche Cerveau et Cognition (UMR 5549, CNRS-UPS), [emmanuel.barbeau@cnrs.fr](mailto:emmanuel.barbeau@cnrs.fr), <http://www.cerco.ups-tlse.fr/~barbeau>

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## PhD position : Visual attention modeling for 3D scenes in Virtual and Mixed Reality

Context: The proposed PhD position is funded by the ANR PISCo project (Perceptual Levels of Detail for Interactive and Immersive Remote Visualization of Complex 3D Scenes) which aims at proposing novel algorithms and tools allowing interactive visualization, in these constrained contexts (Virtual and Mixed reality, with local/remote 3D content), with a very high quality of user experience. As 3D scenes are visualized through a certain viewport, we seek to optimize the display in this viewport by proposing (1) Tools for the generation and compression of high quality levels of details, (2) Visual quality metrics capable of predicting the quality of these levels of detail and driving their generation, (3) Visual attention models capable of predicting where the observer is looking and thus selecting and filtering the primitives and levels of detail . A distinctive property of the project lies into the fact that we will consider rich 3D data, including not only geometric information but also animation and complex physically based materials represented by texture maps (color, metalness, roughness, normals).

Subject: The proposed PhD position concerns the item (3) above. Our goal is to build computational visual attention models that will predict both head and eye-movement in 3 and possibly 6 degrees of freedom environment, taking into account, mesh saliency, rendered scene saliency and human visual behavior (perceptual biases, bottom-up and top down influences, etc.). The visual attention models will also be used for predicting the interaction of the user in the virtual environment (translation + zoom / dezoom). The PhD candidate will benefit from the work already conducted in the LS2N IPI team related to 3D visual attention and perceptual biases:

Required qualifications: Master's degree in Computer Science, good experience with 3D/Unity programming, good knowledge of signal / image processing (in particular applied to graphs), computer graphics, volumetric data processing, and machine learning.

Since the candidate will also building experiments with humans, allowing to gather ground truth data necessary for understanding visual attention mechanisms in 3D virtual environment, previous experience and / or interest in this field is strongly recommended.

Starting date: No specific constraint, the PhD can start from June to September 2018.

Contacts : [matthieu.perreiradasilva@univ-nantes.fr](mailto:matthieu.perreiradasilva@univ-nantes.fr) and [patrick.lecallet@univ-nantes.fr](mailto:patrick.lecallet@univ-nantes.fr)

More information about this PhD position are available here :  
<https://uncloud.univ-nantes.fr/index.php/s/9zH9jgefMAYnFKf>

# Proposition de sujet de Thèse CIFRE e.l.m leblanc / Lab-STICC à Drancy et Brest

Subject:

3D authoring tool of the assembly line and supervision of the activities of operators

This PhD subject will cover the need for Collaborative Design of Industrial Workstations making it possible to manage industrial installations in Industry 4.0. It will be part of the IRON-MEN BPI project led by e.l.m.-leblanc. Indeed, VR is a wonderful and promising tool to enhance the design process of workstations and manufacturing processes. Virtual reality simulation has been shown to be transferable or applicable to the real world [1]. So the idea would be to design an efficient tool making it possible to make a fast design of a workstation and then to test the efficiency of this workstation.

Such a tool should allow the designers of the workstations and of the factory process to simulate evolutions of the global installation, including the process, and also offer them a way to edit parts of the factory through a 3D editor with natural user interaction, and to have a virtual look at it through an immersive 3D visualization, using both VR and AR technologies.

This tool would be a kind of 3D CAD editor dedicated to e.l.m.-leblanc stuff, offering the possibility:

- ❓ to insert workstation elements and gas boilers parts into a simplified 3D model of the factory,
- ❓ to insert new 3D models when new workstations of gas boilers parts are inserted in the real factory,
- ❓ to reconfigure the assembly line when the assembly process needs to evolve,
- ❓ to test the new system in order to check if the instructions given to the operators through

Augmented Reality techniques are consistent and usable to achieve the new operators' tasks. In the scope of this PhD subject, this editor could also benefit from previous research about using collaborative VR including operators, design engineers and ergonomists in the design phase of such workstations [2, 3, 5]. This tool could also embed information about the constraints of the virtual environment that could help designers to manage these constraints such as in [4].

Moreover, this tool should also make it possible to monitor users' activity, by visualizing their moves and the information that the AR system will show them.

❓ As for some of the other PhD subjects of the IRON-MEN project, all the information about the monitoring of the operator and about the parts of the gas boilers will be considered as an input for the simulation system for the global monitoring to visualize them. Anyway, maybe it will be necessary to propose an automatic process to simplify some parts of the CAD data of the gas boilers so that it will be possible to use them with AR systems such as the Microsoft HoloLens.

❓ Then the outputs of the scenario engine (developed by another PhD student in the context of the IRON-MEN project) would be used by the AR system to provide information to the operator, and would be used also by the monitoring tool to visualize them in views dedicated to the designers of the assembly process, to the operators, and to ergonomists for assessing good ergonomics for workstations [7, 8, 9].

This tool should make possible multi-user simulation in order to be able to manage complex multi-user assembly lines, as well as the real monitoring will have to monitor several users in the global



system. This tool would also be a contribution to the “digital twin factory” thematic. The first typical use-case for this research would be a live modification of a workstation, using an AR device in the “shopfloor” of the factory (that is to say with engineers who would be operating directly on a previous version of the real workstation, at the real place it will be used in the factory). While the engineers would be moving the real parts of the workstation, the system would update dynamically the numerical model of the workstation, and the engineers could check with the operators if the AR feedback given to the operators would be OK.

The second typical use-case for this research would be a VR simulation of the modification of the numerical model of a workstation, in a different (empty) space, to address workstation modifications that cannot be done directly on the real workstation, because of too important modifications, or because the physical parts of the workstation do not exist yet, or because the current workstation is busy or must be reused as is very soon so that it would not be efficient to make modifications that should be undone very soon. In this case, a first simulation could be done in VR (using the same AR device than in the first case) with the engineers and the operators, then the engineers could go later on the real “shopfloor”, the AR system would help to place the real parts of the system to fit with the numerical model, and then they could go on as in the first use case.

#### Scheduling

The PhD student will be incorporated to the software development team of the IRON-MEN project, and will participate, with the support of a software development engineer, to the agile software development of the whole IRON-MEN system.

The PhD Student will have to share his/her time between the e.l.m.-leblanc factory in Drancy (93) and IMT Atlantique in Brest (29). The proposed schedule is roughly:

? 2 weeks in Drancy for a kick-off with all the people (engineers, operators, PhD students, researchers) involved in the IRON-MEN project

? #12 months in Brest (state of the art, practice of 3D software, first steps of the prototype)

? #18 months in Drancy (software development, first research results, first deployments)

? #6 months in Brest (writing of the PhD manuscript, final developments, preparing the PhD defense)

#### Contacts

? Thierry Duval : [thierry.duval@imt-atlantique.fr](mailto:thierry.duval@imt-atlantique.fr)

? Sébastien Kubicki : [sebastien.kubicki@enib.fr](mailto:sebastien.kubicki@enib.fr)

? Emmanuel Bricard : [emmanuel.bricard@fr.bosch.com](mailto:emmanuel.bricard@fr.bosch.com)

#### Salary

? 30326 € / year brut (around 2020 € / month net)

#### References

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real and virtual environment: toward virtual reality based ergonomic design sessions. Journal on Multimodal User Interfaces, vol. (2), .. 199-200, 2014

[2] C. Pontonnier, T. Duval, G. Dumont. “Sharing and bridging information in a collaborative virtual environment : a contribution to ergonomics”. in Proceedings of CognitiveCom 2013 24th IEEE International

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## Ingénieur R&D Réalité Augmentée et Réalité Virtuelle (H/F)

### DESCRIPTION DU POSTE

L'activité Réalité Virtuelle (RV), Réalité Augmentée (RA) et Imagerie Numérique (IN) de Saint-Gobain Recherche a pour mission de soutenir et d'accompagner les filiales du groupe dans la valorisation de leurs solutions et innovations à l'aide des dernières technologies disponibles dans les domaines RV/RA/IN. Cette équipe compte 5 personnes spécialisées dans le développement d'applications ou de services basés sur des solutions actuelles des RV ou RA, la préparation de scènes 3D, la caractérisation de matériaux ou d'environnements et la production d'images de synthèse physico-réalistes.

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Quelques exemples de nos réalisations : Glass Pro, Glass dB Station et Placo® dBStation®, Plafond Designer, ou encore la Weber.Applistation.

## ACTIVITÉS

Vos travaux, centrés R&D, viseront à tirer parti des dernières évolutions en termes de restitution en temps réel (visuelle et sonore), aussi bien du point de vue matériel que logiciel.

Au travers de vos missions, les tâches pourront variablement porter sur

- le recueil et l'analyse des besoins,
- le prototypage,
- le développement
- le déploiement et le transfert technologique,
- le maintien opérationnel de nouveaux outils.

De nombreux travaux, exploratoires ou plus appliqués, vous seront confiés afin d'identifier les technologies et les compétences nécessaires au succès des projets.

Une veille technologique active (participation régulière aux conférences spécialisées du domaine) et l'évaluation de matériels/logiciels récents vous permettront de renforcer votre expertise et vos compétences puis de les diffuser en interne.

Vous participerez activement à la vie de l'équipe et pourrez selon les besoins prendre en charge :

l'évolution fonctionnelle d'outils utilisés en interne,

l'approvisionnement éventuel de matériel nécessaire aux études en cours (casques de RV ou de Réalité Mixte, tablettes, serveurs de calcul, système de suivi de position, ...) : dimensionnement, contacts fournisseurs, commande, réception

la mise en service, l'administration et le maintien opérationnel de nouveaux équipements

la recherche et le pilotage de ressources externes

l'encadrement de stagiaires ou d'apprentis

la démonstration des travaux de l'activité

Nous sommes dans une démarche d'amélioration continue de la qualité de nos développements logiciels aussi bien dans les phases amont qu'en prévision de l'industrialisation et du déploiement. Nous adhérons aux valeurs d'échange, de partage et d'entraide permettant la mise en place des meilleures pratiques : pour progresser dans vos travaux, vous bénéficierez du soutien de l'équipe qui compte des experts des domaines du rendu pré-calculé et du temps réel, de la modélisation, UX, UI, ... (mise en commun de connaissances et de compétences à prévoir). Vous serez amené.e à consolider l'équipe en tant que spécialiste et devenir référent.e auprès des autres entités de Saint-Gobain Recherche.

## PROFIL RECHERCHÉ

Ingénieur spécialisé en Informatique Graphique, vous avez déjà côtoyé le domaine de la Recherche. Si ce n'est le cas, vous disposez d'une thèse en lien avec l'imagerie 3D temps réel avec une expérience professionnelle (1-2 ans minimum).

Vos connaissances vous permettent de comprendre les phénomènes physiques ainsi que leur simulation / restitution informatique sur base de publications scientifiques.

Vous vous êtes forgé une culture sur l'Informatique Graphique et vous suivez son évolution au travers de lectures ou de médias disponibles en ligne : les conversations sur ce sujet vous passionnent.

Vous cherchez plus qu'un simple travail.

Dans une démarche de développement personnel en continu, vous vous sentez apte à vous approprier les outils et solutions utilisées à ce jour et à venir, aussi bien :

· théoriques :

Optique, Acoustique, Machine Learning, ...

· techniques :

Architecture matériel et logiciel

Environnement de création d'application 3D type Unity 3D ou Unreal Engine,

Rendu et simulation avancés : Geometry / Vertex / Fragment / Compute Shaders

Technologies de RA/RV

Langages C#, C++, Python...

· méthodologiques :

processus de développement, gestion de version, TDD, BDD, intégration continue, ...

Votre parcours et vos projets personnels démontrent que la qualité de réalisation et la pérennité des développements qui vous ont été confiés vous importent.

Tester, partager, explorer, intégrer de nouveaux outils ou de nouvelles pratiques est une seconde nature.

L'anglais est un outil utilisé quotidiennement.

**QUI SOMMES NOUS?**

Saint-Gobain Recherche est l'un des huit grands centres de recherche de Saint-Gobain. Basé en région parisienne, ses grands domaines de recherche sont liés au verre, aux couches et revêtements de surface, aux matériaux de construction et à l'habitat en général. Préparer le futur en imaginant les produits et procédés de demain autour de l'habitat, l'énergie et l'environnement, tel est le quotidien de ses équipes de recherche.

Pour en savoir plus : [www.saint-gobain-recherche.fr](http://www.saint-gobain-recherche.fr)

<https://jobs.saint-gobain-experience.com/index.html?languageCd=&JobOpeningId=555941&SiteId=1&PostingSeq=1>

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## **Post-doc : Les gestes techniques pour la formation et l'apprentissage humain**

Laboratoire : IRIT, équipe REVA - Entreprise : MIMBUS

Supervision : Jean-Pierre JESSEL et David Sanchez

Lieu : Toulouse

Date de début : septembre 2018 Durée : de 6 à 12 mois

L'Association française de Réalité Virtuelle, Augmentée, Mixte et d'Interaction 3D (AFRV) a vu le jour en novembre 2005. Fondée par une douzaine de chercheurs et de cadres de l'industrie, cette association loi 1901 entend fédérer la communauté française, académique et industrielle, autour de ces thèmes. Plus d'informations sur le site Web : <http://www.af-rv.fr>.

Retrouvez les anciens numéros de rêverie : <http://www.af-rv.fr/index.php/ressources/reveries/>

Adhérez à l'AFRV : <http://www.af-rv.fr/index.php/adhesion/>

Salaire selon grilles CNRS / Universités

Mots-clés : geste technique, capture de mouvements, animation, environnement virtuel pour la formation et l'apprentissage humain, techniques d'apprentissage automatique.

Sujet : L'analyse de mouvement présente un grand intérêt dans de nombreux domaines d'application. Dans le contexte du geste professionnel et du geste industriel, les principales préoccupations sont l'étude du poste de travail (ergonomie, accessibilité, sécurité) et la prévention ou le suivi thérapeutique des troubles musculo-squelettiques (TMS). Le projet VULCANIZER a pour objet les environnements virtuels pour la formation et l'apprentissage humain. Le post-doctorant sera mener une étude sur les gestes techniques à partir de mouvements capturés dans des environnements virtuels ou dans le monde réel. Cette étude partira de l'état de l'art sur la capture, la modélisation et l'analyse de mouvement dans différents domaines. Les phases d'observation et de capture seront liées à l'utilisation de différents dispositifs (du domaine du jeu vidéo, de la réalité virtuelle, de la vision dynamique ...).

Pour l'exploitation des mouvements capturés, une analyse de données (dynamiques de trajectoires, configuration articulaires, DDL, ) autour d'une approche data driven analysis / simulation, et des méthodes de comparaison réel-virtuel.

Les résultats devront permettre de pouvoir montrer le « bon geste » (sur un mannequin, un fantôme) dans l'environnement d'apprentissage, en direct ou hors ligne. Le bon geste s'entend par le fait de rester dans des volumes limites des configurations articulaires, de trouver un geste approprié ou non par rapport à la tâche ... Le suivi de l'attention et l'évaluation des connaissances de l'apprenant à travers son geste seront aussi à considérer.

Compétences requises en

- Capture de mouvements (capture, analyse et traitement de mouvements capturés, animation ou robotique humanoïde),
- Environnement virtuel pour la formation et l'apprentissage humain, techniques d'apprentissage automatique.
- Connaissance des dispositifs de capture de mouvement
- Programmation d'applications dans des environnements comme Unity3D.

Envoyer votre candidature à : jean-pierre dot jessel at irit dot fr et david dot sanchez at mimbus.com

Votre candidature devra comporter :

- CV détaillé et lettre de motivation,
- Rapports de pré soutenance et de soutenance,
- Lien sur thèse,
- Lettres de recommandations souhaitables.

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## **CfP - The 8th IEEE Symposium on Large Data Analysis and Visualization Held in conjunction with IEEE VIS 2018**

Call for Papers

LDIV 2018 - Large Data Analysis and Visualization

L'Association française de Réalité Virtuelle, Augmentée, Mixte et d'Interaction 3D (AFRV) a vu le jour en novembre 2005. Fondée par une douzaine de chercheurs et de cadres de l'industrie, cette association loi 1901 entend fédérer la communauté française, académique et industrielle, autour de ces thèmes. Plus d'informations sur le site Web : <http://www.af-rv.fr>.

Retrouvez les anciens numéros de rêverie : <http://www.af-rv.fr/index.php/ressources/reveries/>

Adhérez à l'AFRV : <http://www.af-rv.fr/index.php/adhesion/>

October 21, 2018, Berlin, Germany

<http://www.ldav.org/>

\*\*\* Abstracts due June 17 \*\*\*

\*\*\* Full Papers due July 1 \*\*\*

Contact: [papers@ldav.org](mailto:papers@ldav.org)

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Data scales are increasing throughout scientific, business, and research contexts. Large-scale scientific simulations, observation technologies, sensor networks, and experiments are generating enormous datasets, with some projects approaching the multiple exabyte range in the near term. Gaining insight from massive data is critical for disciplines such as climate science, nuclear physics, security, materials design, transportation, urban planning, and so on. Business-critical decisions are made based on massive data in domains like social media, machine learning, software telemetry, and business intelligence. The tools and approaches needed to search, analyze, and visualize data at extreme scales can be fully realized only from end-to-end solutions, and with collective, interdisciplinary efforts. The 8th IEEE Large Scale Data Analysis and Visualization (LDAV) symposium, to be held in conjunction with IEEE VIS 2018, is specifically targeting methodological innovation, algorithmic foundations, and possible end-to-end solutions. The LDAV symposium will bring together domain experts, data analysts, visualization researchers, and users to foster common ground for solving both near- and long-term problems.

SCOPE:

We are looking for both original research contributions and position papers on a broad-range of topics related to collection, analysis, manipulation, and visualization of large-scale data. We are particularly interested in innovative approaches that combine information visualization, visual analytics, and scientific visualization.

We are interested in methods for data at scale, including:

- \* Distributed, parallel, and multi-threaded computation
- \* Streaming methods
- \* Innovative software solutions
- \* Advanced hardware and GPU-based approaches
- \* Hierarchical data storage, retrieval, processing, and rendering
- \* Sampling, approximate query processing, and progressive computation
- \* Collection, management, and curation of massive datasets
- \* Scalable visualization and exploration methods
- \* Ensemble data visualization and analysis
- \* In-situ data analysis

We are also interested in understanding state of the art techniques, including:

- \* Best practices for large data visualization
- \* End-to-end system solutions in a large data context
- \* Industry solutions for big data analysis and visualization

We are interested in research on the context of visualization, including:

- \* Collaboration or/and co-design of large data analysis with domain experts
- \* Topics in cognitive issues specific to manipulating and understanding large data
- \* Application case studies
- \* New challenges in visualizing experimental, observational, or simulation data

L'Association française de Réalité Virtuelle, Augmentée, Mixte et d'Interaction 3D (AFRV) a vu le jour en novembre 2005. Fondée par une douzaine de chercheurs et de cadres de l'industrie, cette association loi 1901 entend fédérer la communauté française, académique et industrielle, autour de ces thèmes. Plus d'informations sur le site Web : <http://www.af-rv.fr>.

Retrouvez les anciens numéros de rêverie : <http://www.af-rv.fr/index.php/ressources/reveries/>

Adhérez à l'AFRV : <http://www.af-rv.fr/index.php/adhesion/>

### Full Papers

Full papers should have a maximum length of 9 pages with up to two (2) additional pages allowed for only references (maximum total of 11 pages). Full papers may make contributions in techniques, systems, applications, evaluations, or theory. The contributions of full papers are reviewed based on their novelty, contribution, replicability, and evaluation.

### Short Papers

Short papers should have a length of 4-5 pages in total. Short papers are a venue to report smaller contributions than full papers. Position papers and showcases of interesting application of visualization are good topics for short papers. Technique, system, application, evaluation, or theory papers that have a smaller contribution than a full paper can also be submitted as a short paper.

### SUBMISSION INSTRUCTIONS:

LDAV is accepting both full papers and short papers. The manuscripts should be formatted according to guidelines from IEEE VGTC (<http://www.cs.sfu.ca/~vis/Tasks/camera.html>).

Submission of an abstract is required prior to submission of a paper or short paper.

Submission site note: Go to the submission site (<https://new.precisionconference.com/vgtc>), log in, go to 'Submissions',

and select Society 'VGTC', Conference 'LDAV 2018', and Track 'LDAV 2018 Papers'.

### PROCEEDINGS:

The proceedings of the symposium will be published together with the VIS proceedings and via the IEEE Xplore Digital Library.

### BEST PAPER:

The LDAV Program Committee will present a Best Paper award to the authors whose submission is deemed the strongest according to the reviewing criteria. This award will be announced in conjunction with VIS 2018.

### IMPORTANT DATES:

Please note: all deadlines are firm and no extensions will be granted.

Abstract Deadline (firm): June 17, 2018

Paper Submission (firm): July 1, 2018, 11:59 PM (AOE)

Author Notification: August 12, 2018

Camera-Ready Deadline (firm): August 17, 2018

Hongfeng Yu, Julien Tierny, and Danyel Fisher

LDAV 2018 Papers Chairs

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