

CALL FOR PAPERS VRIC 2010

12th Virtual Reality International Conference, April 7-9, 2010, Laval, France
<http://www.laval-virtual.org>

The most renowned international specialists and the principal users of Virtual Reality technology share the very latest techniques from their fields of expertise. VRIC 2010 - Virtual Reality International Conference - will be held during the 12th edition of Laval Virtual, first European event devoted to Virtual Reality, Realtime 3D and Interactive Techniques.

Spread the word and **submit your full papers for January 11, 2010!**
Prof. Simon RICHIR, VRIC Conference Chair

Program & Themes:

>>> April 7, 9-12 AM / 2-5 PM

- **Virtual and Augmented Reality for Product Design**
- **VR for Medicine & Surgery**
- **High Performance and Low Latency VR/AR**

• VRIC 2010 Keynote Speaker: **Carolina Cruz Neira**, Head of LITE, USA, "A decade of wonderful VR achievements"

>>> April 8, 9-12 AM / 2-5 PM

- **Recent Advances in Haptic Interaction**
- **Recent advance en VR/AR & Emerging top showcases**
- **Art, Identity and Digitalisation**

>>> April 9, 9-12 AM / 2-5 PM (Exhibition Hall – Salle Polyvalente)

- Laval Virtual, Professional Exhibition & **VRIC Demonstration Forum** (ReVolution scientific contest) - April 7-9
- Laval Virtual AFRV Best Paper Award Ceremony – 12.30 PM (Exhibition Hall - Auditorium)

>>> Social events

- Laval Virtual Gala Dinner, April 7, 20h (Exhibition Hall – Salle Polyvalente)
- Laval Virtual Awards Ceremony, April 8, 19h (Conference Hall – Laval Grand Theatre)

Important dates

Submission of full papers: January 11th, 2010

Notification of acceptance: February, 15th

Final paper due for: March, 5th

Submission website: <http://www.laval-virtual.org/openconf/openconf.php>

Submissions can be done for oral (30 min) and poster presentations.

Double blind review. Best paper awards (AFRV best paper, best student paper, best poster).

Some conference selected papers will be published in a special issue of the Journal of Virtual Reality and Broadcasting <http://www.jvrb.org/>

Organised by: **LAVAL VIRTUAL**

in collaboration with: IEEE France - ACM Siggraph - AFRV

More information is available on the conference website <http://www.laval-virtual.org>

6 full day thematic symposiums & workshops are proposed this year:

Virtual and Augmented Reality for Product Design – S1 - April 7, 9-12 AM / 2-5 PM

Symposium chairs: Alexis Paljic, PhD, Mines ParisTech, alexis.paljic@mines-paristech.fr / Roland Blach, PhD, Fraunhofer IAO Germany

The framework of this symposium is of the use of virtual reality for the design of factory-made products, and more generally any design process. Virtual and augmented reality have now successful uses in the design process of large industries such as aeronautics, automotive or energy, with applications at various levels, Computer Aided Industrial Design, Computer Aided Manufacturing, Computer Aided Engineering, in both product and process problematics.

Although the review of Virtual Reality digital and functional mockups are actual tools for the design activity, the industries have identified new specific needs for novel design tools that are suited for immersive environments. Among these new needs we can point out the immersive creation or modification of product characteristics, shapes, volumes, the modification of features, the changes on functional models, the use of multi-physics, accessibility or human models to achieve assisted or constrained design.

This is a rather new and open field of research, and these new applications challenge VR and AR communities with needs for innovative user interfaces, adapted interactions, and raise new issues in data representation, application control and data flow.

In this framework, the VR and AR for Product Design symposium calls for research, state of the art or application paper presentations on these, non restrictive, topics: VR/AR Interaction techniques adapted to immersive design - Immersive CAD creation/ modification techniques - Immersive techniques for adapting data flow / data representation / data granularity to CAD specificity - Multimodal interfaces for immersive design - Application control for immersive design - User studies and cognitive approaches for adapting tools to design actors expertise and design practices - Experiences in integration of immersive techniques in actual design processes - Novel Frameworks, hardware and software approaches for VR/CAD integration - Bidirectional VR / CAD Data Flows

Contributions are welcome from industrial, academic and government researchers and experts, from VR/AR and related communities, from industrial domains and other potential application domains such as urbanism, architecture or sustainable development.

Keywords: product design, VR & design, industrial applications, immersive creation, VR & CAD...

VR for Medecine & Surgery – S2 - April 7, 9-12 AM / 2-5 PM

Symposium chairs:

Caroline Essert, PhD, LSIIT - University of Strasbourg, France, essert@unistra.fr
Naoki Suzuki, MD, PhD, Institute for High Dimensional Medical Imaging - Jikei University, Tokyo (also keynote speaker)

Virtual and augmented reality have known an increasing interest since the past few years in the field of medicine and surgery. Image-guided surgery, computer-aided therapy, surgical simulators, training and educational systems using VR and haptics, VR based rehabilitation devices, haptically controlled teleoperating systems, are now getting more and more domesticated by surgeons and physicians, who are in demand of such tools. VR tools allow surgeons to practise and rehearse on virtual patients that are realistic replicas of living patients with actual pathologies, and to experiment various

scenarios without risk. Virtual patients intend to become the best friends of surgeons. VR can also guide the physicians, and bring them extra information before (diagnosis) or during the procedures (image-guided therapy). This symposium aims at bringing together a community of researchers, computer scientists, physicians, surgeons, engineers, to share points of views and latest advances in the fields of virtual reality, augmented reality and haptics for medicine and surgery, emerging and future tools for diagnosis and therapy.

Keywords: medical and surgical simulators, VR-based rehabilitation, virtual patient, haptics, virtual reality, augmented reality, VR devices for medicine and surgery...

High Performance and Low Latency VR/AR – S3 - April 7, 9-12 AM / 2-5 PM

Symposium chairs:

Bruno Raffin, INRIA, bruno.raffin@imag.fr

Torsten Kuhlen, RWTH Aachen University, kuhlen@vr.rwth-aachen.de

The goal of this symposium is to gather research contributions, experience reports, and applications to the central issue of performance and latency in Virtual Reality, Augmented Reality and Mixed Reality. Today, the community is facing a challenging yet exciting change. Computing architectures are moving towards a multi-core scheme and a combination of multiple CPUs and co-processors like GPUs. This affects all platforms, from simple PCs to high performance computers, or embedded platforms. Many see VR as a potential "killer application" for multi-core architectures. They offer an incredible opportunity to create a new generation of high performance interactive frameworks and applications. However, VR toolkits as well as applications need to be revisited to take advantage of the potential computing power, often requiring some deep changes.

The symposium will welcome all contributions related to performance and latency issues in all flavors of VR frameworks and applications like (not limiting):

Software engineering issues for VR/AR frameworks

Programming environments and middleware libraries

Multi-core and co-processor (GPUs, Cell, FPGA, ...) computing

Parallel data acquisition, computing and rendering

Strategies for latency reduction

Communication models (push, pull), data flow regulation, sampling

Work balancing strategies

Distributed virtual environments

Real-time physics, haptics, and sound

Complex, interactive applications

Interactive analysis of large datasets

Interactive steering of complex simulations

Embedded applications

Coupling and coherency issues in multi-modal applications

Application monitoring, on-line or post-mortem performance visualization

Performance models for virtual environments

Keywords: Performance issues and approaches in VR/AM/LMR; Real-Time; Latency...

Recent Advances in Haptic Interaction – S4 - April 8, 9-12 AM / 2-5 PM

Workshop chairs: Anatole Lécuyer (INRIA, France), anatole.lecuyer@irisa.fr

Tomohiro Amemiya (NTT, Japan), t-amemiya@avg.brl.ntt.co.jp

The **haptic sense** provides the most natural way to experience contact with virtual worlds, including the perception of features such as forces, stiffness or roughness of

virtual materials. Unlike visual or auditory rendering, haptic rendering is relatively new and the associated interfaces and techniques are less widespread. However, numerous haptic interfaces have been developed up-to-now, including force-feedback and tactile devices.

Haptic interaction with real or virtual environments is a highly **multidisciplinary** field of research which expands fast. The design of efficient haptic interfaces and their integration in applications involve various research challenges including *hardware, software* or *perceptual* issues.

This workshop intends to foster discussions and exchanges among participants and provide the audience with recent and original findings in the field of haptic interaction, covering all its aspects. The workshop solicits research papers (4-6 pages) and posters (1-2 pages) in the area of *Haptic Interaction* addressing one or more of the following topics, although authors should not feel limited by them:

- Haptic perception, haptic illusions, multimodal integration, perception-based haptics
- Haptic devices, tactile/force-feedback, human-scale haptics, wearable haptics
- Haptic interaction techniques, computer-human interaction based on haptics
- Haptic rendering, computer haptics, haptic software architecture
- Haptic applications, integration of haptics in virtual environments

Keywords: haptic interaction, force-feedback, tactile interaction, haptic devices, haptic rendering, perception

Recent advance en VR/AR & Emerging top showcases – S5 - April 8, 9-12 AM / 2-5 PM

Symposium chairs: Eric Marchand, PhD, Université de Rennes 1, IRISA, INRIA,
Eric.Marchand@irisa.fr

For some time now, we see the development of AR application on mobile devices and smartphones. The design of efficient localization techniques and interfaces and their integration in applications using such devices involves various research challenges including tracking, sensor integration, rendering, usability, etc. With the growing development of computer vision techniques and, jointly, of outdoor mobile network infrastructure, localization services become a new standard and therefore offer new possible application domain in Augmented Reality. This symposium aims at bringing together researchers in computer science, computer graphics and computer vision in order to present their state-of-the-art developments that will ensure the foundations of new applications of augmented reality.

Submissions on theoretical developments as well as computational techniques allowing the creation of new applications of MR / AR and demonstrating the link with VR are strongly encouraged in the following domains (although not limited to):

Computer vision for AR

Tracking technologies

Knowledge representation in mixed environments

Mobile AR

Multi-sensor tracking

interaction techniques for AR

AR experience reports

Application : museum visit (cultural heritage), AR for architecture, industrial inspect, commercial, etc.

Human factor in AR (usability, acceptance)

Links between VR and AR

Keywords: Virtual & Augmented Reality, Research, Applications...

Art, Identity and Digitalisation – S6 - April 8, 9-12 AM / 2-5 PM

Symposium chairs: Colin Schmidt, PhD, Arts et Metiers ParisTech, Colin.Schmidt@univ-lemans.fr

Alain Lioret, PhD, Paris 8 Univ, alainlioret@gmail.com

The use of various and numerous real time technologies allows the emergence of new types of artistic work and identities thus invading painting, sculpture, architecture, dance, music, theatre, cinema, the workplace, family life, etc.

Difference, Relation and Identity are three notions that are fundamentals for the success of Virtual Reality technologies (VR and AR). The aim of this symposium is to conceptualise the Identity of an individual as a scientific concept whilst acknowledging the fact that Identity cannot be studied without considering the other two notions. With digitalisation, Identity can be an artistic creation. The pros and cons of designing identities for or within VR become obvious upon admitting that representing any Self will be interpreted through the set values, opinions and experience in life of the beholder. Members of our society that self-procure, attribute or redistribute Identity in the Virtual World bring about psychological enquiries in relation to user intentionality, specific uses of VR applications or modifications to our ways of communicating emotions and doing Art. Usability issues addressing the newer artistic problems of Identity have not yet been integrated into long-term visions of society's needs. The Chairs are thus open to existential, ethical and epistemological issues having to do with all aspects of Art and Identity in Virtual Communities.

This symposium is aimed at discovering what Virtual Reality brings about in the world of Art, through the experience of new XXI th century artists, as well as what it takes away from, or adds to, our human identity. Furthermore, it aims to show the impact of Aesthetics and human identity on Virtual Reality.

Keywords:

Human Identity, Cognition, Epistemology of Technology, Evolutionary Art, Robotic Art, Performing Arts. Avatars, Suspended Beliefs, Interpretation, Intentionality, On-line Personae, the Self

More infos and on <http://www.laval-virtual.org>