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Επιλογή* in Crisis**

*επιλογή = επί (= on, for) + λόγος (reason, cause, speech) επιλογή (choice) | **crisis = κρίση (= a time of intense difficulty, judgment) ...............................................................351
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Where is VR consumer market heading at: Head Mounted Displays or CAVE-like experiences?
Organizer: David Nahon

The Resurgence of Open-Source Frameworks for VR
Organizer: Yuval Boger

Social Interactions in Virtual Reality: Challenges and Potential
Organizers: Laura Trutoiu and Betty Mohler

Next Gen Evaluation of VR Interfaces
Organizer: Rob Lindeman
Workshops

Workshop on Everyday Virtual Reality: Rethinking Virtual Reality for Home and Office Environments (WEVR 2015)

Organizers: Adalberto Simeone, Wendy Powell, Vaughan Powell

Traditionally, Virtual Reality has been conceived for purpose-built highly instrumented laboratories. However, the upcoming release of consumer grade Virtual Reality head-mounted displays will allow users to experience VR in everyday environments such as their own home or office where obstacles are commonplace and tracking is not trivial. If consumer VR is to evolve beyond the desktop paradigm, a rethinking of the way we design and implement interactive VR systems for these environments is needed. This one-day workshop will bring together researchers and industry practitioners to explore these new challenges and define a new research agenda.

First International Workshop on Virtual and Augmented Reality dedicated to Molecular Science (VARMS2015)

Organizers: Nicolas Férey, Marc Baaden and Olivier Delalande

From the 70s up to today, Molecular Science and Virtual Reality have maintained close ties, the needs of the first nourishing the scientific issues of the second.

The field of Molecular Science has been a pioneer in the design and use of advanced 3D human/computer interactions and devices such as haptic ones. Before the advent of computers and visualization, Molecular Science researchers used to build physical models in order to achieve a visual representation of theoretical models. These physical representations, which have been used for a while, opened the way to tangible interfaces to couple physical and numerical models using Augmented and Virtual Reality techniques. Today we are witnesses to a revolution in terms of access to Augmented and Virtual Reality methods for all other scientific fields, thanks to new immersion, 3D interaction and rendering devices.

In this context, the international IEEE Virtual Reality 2015 conference, through the VARMS workshop, gives researchers an excellent opportunity to: keep up to date with new approaches at the interface between Augmented and Virtual Reality, 3D User Interfaces and Video Games to popularize Molecular Science, both in research and teaching contexts, identify efforts to support the deeper integration of Virtual Reality techniques in the processes and practices of research laboratories and companies in the Molecular Science field, promoting the usefulness and usability of Virtual and Augmented Reality in Molecular Science, implying deep ergonomic analyses and user evaluations in the targeted field, highlight convincing success stories, thereby catalysing the use of Virtual and Augmented Reality in the targeted community, as actual research achievements that lead to decisive results in Molecular Science are still rare.

Eighth Workshop on Software Engineering and Architectures for Realtime Interactive Systems (SEARIS 2015)

Organizers: Marc Erich Latoschik, Dirk Reiners, Roland Blach and Pablo Figueroa

SEARIS provides a forum for researchers and practitioners working on the design, development, and support of realtime interactive systems (RIS). These systems span from Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) environments to novel Human-Computer Interaction systems (such as multimodal or multitouch architectures) and entertainment applications in general. Their common principle is a strong user centric orientation which requires real-time processing of simulation aspects as well as input/output events according to perceptual constraints. Therefore, we encourage researchers and developers of real-time human computer interaction systems of all flavors to share their experiences and learn from each other during this workshop.

Second International Workshop on Sonic Interactions in Virtual Environments (SIVE 2015)

Organizer: Stefania Serafin, Federico Avanzini, Michele Geronazzo, Cumhur Erkut, Amalia De Goetzen, Rolf Nordahl

Sonic interaction design is defined as the study and exploitation of sound as one of the principal channels conveying information, meaning, and aesthetic/emotional qualities in interactive contexts. This field lies at the intersection of interaction design and sound and music computing.

In the virtual reality community, the focus on research in topics related to auditory feedback has been rather limited when compared, for example, to the focus placed on visual feedback or even on haptic feedback.

However, in communities such as the film community or the product sound design community it is well known that sound is
a powerful way to communicate meaning and emotion to a scene or a product.

The main goal of this workshop is to increase among the virtual reality community the awareness of the importance of sonic elements when designing virtual environments. We will also discuss how research in other related fields such as film sound theory, product sound design, sound and music computing, game sound design and computer music can inform designers of virtual reality environments.

Moreover, the workshop will feature state of the art research on the field of sound for virtual environments.

Third International Workshop on Virtual and Augmented Assistive Technology (VAAT)

Organizers: John Quarles, Victoria Interrante

The IEEE VR 2015 Workshop on Virtual and Augmented Assistive Technology is intended to bring together technological and clinical research communities to advance the state-of-the-art in Virtual Reality (VR) and Augmented Reality (AR) assistive technology. Over the past several decades, there has been a host of research conducted to improve rehabilitation and enable assistive technology for persons with disabilities (e.g., cognitive, physical) through VR and AR. However, this area needs to take more advantage of state-of-the-art VR and AR technology. We believe this situation could be improved if the two contributing communities to this area - the technology and the clinical communities - had greater opportunity for more direct interaction and collaboration to advance the field. This is the primary goal of this workshop.

Workshop on Perceptual and Cognitive Issues in AR (PERCAR)

Organizers: Kiyoshi Kiyokawa, Ernst Kruijff, Ed Swan

The IEEE VR 2015 Workshop on Perceptual and Cognitive Issues in AR (PERCAR) is intended to advance the state-of-the-art in human factors driven research in Augmented Reality.

The goal of this workshop is to come to a better understanding of the various perceptual and cognitive issues that affect the design of effective augmented reality systems. There is neither an in-depth overview of these factors, nor well-founded knowledge on most effects as gained through formal validation. In particular, long-term usage effects are inadequately understood. However, mobile platforms and emerging display hardware (e.g., Google glass and competing displays with similar form factors) are leading an explosion in the number of users, as well as duration of system usage. To fulfill usability needs, a thorough understanding of perceptual and intertwined cognitive factors is highly needed by both the research community and industry: issues such as depth misinterpretation, object relationship mismatches, and information overload can severely limit usability of applications, or even pose usage risks. Based on the gained knowledge, new interactive visualization and view management techniques can be iteratively defined, developed and validated, and optimized for the identified effects to create more usable applications. We expect researchers to submit early work, such as initial analyses of user studies or experimental visualization techniques, although position papers that comprise several pages and summarize a range of previous experiments or experiences (survey) also fall inside the scope of the workshop.

Tutorials

eRis - Engineering Realtime Interactive Systems

Abstract

eRis provides a one day tutorial about the art of engineering realtime interactive systems (RIS) in the area of highly interactive systems and perceptual computing typical for Virtual, Augmented, Mixed Reality and computer games. The course covers theoretical models derived from the requirements of the application area as well as common handson and novel solutions necessary to tackle and fulfill these requirements.

The first part of the course will concentrate on the conceptual principles characterizing realtime interactive systems. Questions answered are: What are the main requirements? How do we handle multiple modalities? How do we define the timeliness of RIS? Why is it important? What do we have to do to assure timeliness? The second part will introduce a conceptual model of the mission critical aspects of time, latencies, processes, and events necessary to describe a system’s behavior. The third part introduces the application state, it’s requirements of distribution and coherence, and the consequences these requirements have on decoupling and software quality aspects in general. The last part introduces some potential solutions to data redundancy, distribution, synchronization, and interoperability. Each part of the course will take 90 minutes.
Along the way, typical and prominent stateoftheart approaches to reoccurring engineering tasks are discussed. This includes pipeline systems, scene graphs, application graphs (aka field routing), event systems, entity and component models, and others. Novel concepts like actor models and ontologies will be covered as alternative solutions. The theoretical and conceptual discussions will be put into a practical context of four of today’s commercial and research systems, i.e., X3D, instant reality, Unity3d, Unreal Engine 4, and Simulator X.

LUHRDs - Large, Ultra High Resolution Displays

Abstract

A recent trend in interactive environments are large, ultra high resolution displays (LUHRDs). Compared to other large interactive installations, like the CAVE tm, LUHRDs are usually flat or (slightly) curved and have a significantly higher resolution, offering new research and application opportunities.

This tutorial provides information for researchers and engineers who plan to install and use a large ultrahighresolution display. We will give detailed information on the hardware and software of recently created and established installations and will show the variety of possible approaches. Also, we will talk about rendering software, rendering techniques and interaction for LUHRDs, as well as applications.

Cardboard Unity Codelab

Abstract

Come learn how to turn a regular Android device into a VR HMD with Unity and your laptop.

This codelab is an introduction to how to take a first person game made in Unity and enhance it to have a Virtual Reality mode using the Google Cardboard SDK for Unity.

Unity - Unity Integration of OpenCV & Vuforia for Augmented Reality

Abstract

This tutorial is designed to present an introduction of augmented reality using an integration of OpenCV (via OpenCVSharp) and Vuforia. We have found ourselves using this combination often when developing Unity-based AR applications, so we decided to develop this tutorial for IEEE VR 2015.

The tutorial covers the use of OpenCV (via OpenCVSharp) and Vuforia with the Unity3D game engine by demonstrating the use of both libraries in tandem to support the development of advanced Augmented Reality (AR) applications. We will provide a step-by-step introduction to OpenCV and Vuforia as well as the key aspects of Unity that support the development of AR applications. We will demonstrate each library by walking through an example application during the morning and afternoon sessions. In both the OpenCV and Vuforia forums, it is common for these two libraries to be used together for the purpose of an Augmented Reality applications as they have complementary capabilities.

OpenCV is a library with capabilities developed for and used in the field of computer vision. OpenCV is extremely useful with the capture and processing of images, however, OpenCV has little in the way of augmenting these images with additional 2D and 3D structures. This limitation can be overcome by using the Vuforia library. Vuforia has a strong set of features to aid in the development of AR applications as well as excellent support for object and pattern detection. Vuforia works by recognizing certain patterns and objects in the real world and it is capable of projecting a 2D or 3D structure onto those objects.

The tutorial will be structured in such a way that the morning will focus on OpenCV and the afternoon in Vuforia. For each session we will have a set of modules to describe the technical capabilities of each API, its use within Unity, and we will cover a step-by-step application that the attendees can follow along with us in their laptops.

When the tutorial wraps up, the attendees will have a completed game using OpenCV and Vuforia for a handheld tablet. The game will use OpenCV to capture hand gestures from the forward facing camera and process them for Vuforia to augment the real world based on the data from OpenCV.