

Interactive Surfaces for Interaction with Stereoscopic 3D (ISIS3D) Tutorial and Workshop at ITS 2013

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ABSTRACT

With the increasing distribution of multi-touch capable devices multi-touch interaction becomes more and more ubiquitous. Multi-touch interaction offers new ways to deal with 3D data allowing a high degree of freedom (DOF) without instrumenting the user. Due to the advances in 3D technologies, designing for 3D interaction is now more relevant than ever. With more powerful engines and high resolution screens also mobile devices can run advanced 3D graphics, 3D UIs are emerging beyond the game industry, and recently, first prototypes as well as commercial systems bringing (auto-) stereoscopic display on touch-sensitive surfaces have been proposed. With the Tutorial and Workshop on “Interactive Surfaces for Interaction with Stereoscopic 3D (ISIS3D)” we aim to provide an interactive forum that focuses on the challenges that appear when the flat digital world of surface computing meets the curved, physical, 3D space we live in.

Author Keywords

Stereoscopic Displays, 3D User Interfaces and Interaction, Touch- and Gesture-based Interfaces, Adaptive and Perception-inspired Interfaces, Psychophysiological Studies related to Stereoscopy

ACM Classification Keywords

H.5.2 Information interfaces and presentation: User Interfaces. - Graphical user interfaces (GUI)

General Terms

Human Factors; Design; Experimentation; Measurement.

TOPIC OF TUTORIAL AND RELEVANCE TO COMMUNITY

The Tutorial on “Interactive Surfaces for Interaction with Stereoscopic 3D (ISIS3D)” aims to provide an interactive tutorial followed by a workshop that focuses on the challenges that appear when the flat digital world of surface computing meets the curved, physical, 3D space we live in.

Several research groups in the ITS community started to explore the challenges, but also limitations of 3D interaction on interactive surfaces, and topics such as 3D UI design methods, 3D interaction techniques, and their development in the context of hardware development and quantifying perceptual limitations. The goal of the tutorial and workshop is to foster discussions among participants and to provide an intensive exchange between industrial and academic researchers working in the area of 3D interactive surfaces, especially 3D UI design or touch-based interaction with stereoscopic 3D displays.

NATURE OF THE TUTORIAL AND WORKSHOP

Starting with a tutorial, we introduce stereoscopic interactive surfaces from hardware conception about input and output technologies, perceptual issues, HCI aspects and different applications. The tutorial will be followed by a workshop that solicits position abstracts. Abstracts should contain a distinct position on research or design work within the scope of touch

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interaction and 3D or stereoscopic display. A strong focus of the tutorial as well as the workshop will be on the challenges of 3D interaction on 2D surfaces.

The workshop welcomes submissions addressing one or more of the following topics:

- Stereoscopic Displays
- 3D User Interfaces and Interaction
- Touch- and Gesture-based Interfaces
- Adaptive and Perception-inspired Interfaces
- Psychophysiological Studies related to Stereoscropy

Interaction with stereoscopic 3D is a very timely topic. Due to this fact we will adapt the final layout and design of the workshop together with the participants. The workshop will be organized in form of a panel, in which speakers get invited based on their position papers, and will present a position statement, followed by a panel discussion.

PRELIMINARY PROGRAM

Part 1 - Tutorial

The tutorial will mainly addresses the following topics:

- Hardware-Setups for Interactive Stereoscopic Surfaces (In-/Output) (including touch technologies such as diffuse illumination, frustrated total internal reflection, resistive, capacitive),
- 3D Interaction Metaphors to navigate, select, manipulate stereoscopic data,
- Applications for interactive stereoscopic surfaces,
- Challenges of 3D interaction on 2D surfaces.

Part 2 - Workshop/Panel

Invited speakers will present a position statement, followed by a panel discussion.

PHYSICAL REQUIREMENTS AND REQUESTED LENGTH

Seminar room equipped with projector and movable chairs for the panel. No other special needs required. The tutorial and workshop will be a full-day session: 4+4 hours.

ORGANIZERS' BACKGROUNDS

Florian Daiber

Florian Daiber is a researcher at the German Research Center for Artificial Intelligence (DFKI). His research interests are intelligent user interfaces with special consideration of multi-touch interaction. Since 2010 Florian Daiber is member of DFKI and mainly involved in the interscopic Multi-touch Surfaces (iMUTS)-project. Florian Daiber has a strong interest in interaction with stereoscopic data on and above the surface, organized the CHI SIG Touching the 3rd Dimension and was also involved in the follow-up CHI workshop "The 3rd dimension of CHI (3DCHI)" and the Dagstuhl Seminar "Touching the 3rd dimension".

Bruno R. De Araujo

Bruno R. de Araujo is a PhD Student at the Instituto Superior Tecnico from the Technical University of Lisbon and is

recently a researcher at the MINT group from INRIA Lille. He was a researcher at INESC-ID and the Visualization and Intelligent MultiModal Interfaces Group. He participated on several European Research Projects such as SMARTS-KETCHES, IMPROVE, MAXIMUS and SATIN researching advanced interaction techniques for 3D surfacing using Calligraphic interfaces and innovative interfaces for immersive and mixed reality combining interactive tabletops and large scale displays. He is interested in large scale display based visualization using PC cluster and multi-projector systems, and participated in design of tiled display visualization infrastructure for the LEME (Laboraty in Mobility and Excellence) at IST. He presented several tutorials about designing multi-projector VR systems at both IEEE VR and Eurographics conferences. Currently, he is finishing his PhD on semi-immersive environments for 3D modeling and collaborated on several Portuguese FCT projects (VIZIR, CEDAR, MIVIS) and the ANR French project (Instinct) regarding innovative interfaces for stereoscopic interactive surfaces.

Frank Steinicke

Frank Steinicke is a professor in Computer Science in Media at the Department of Computer Science at the University of Würzburg and chair of the Immersive Media Group. Since 2012 he is the director of the newly founded interdisciplinary Institute for Human Computer Media. His research is driven by understanding the human perceptual, cognitive and motoric skills and limitations in order to reform the interaction as well as the experience in computer-mediated realities. Frank Steinicke regularly serves as panelist and speaker at major events in the area of virtual reality and human-computer interaction. The results of his work have been published and presented in several international conferences and journals including CHI, SIGGRAPH, VR, ACM TOG, IEEE TVCG, and many others. Furthermore, he is on the IPC of various national and international conferences and currently co-chair of ACM SUI 2013, GI VR/AR 2013, and IEEE 3DUI 2014.

Wolfgang Stuerzlinger

Dr. Stuerzlinger is a leading researcher in three-dimensional user interfaces and virtual reality, and also very active in human-computer interaction. He graduated with a Doctorate in Computer Science from the Technical University in Vienna, Austria in 1993. Supported by an Erwin-Schrödinger fellowship Dr. Stuerzlinger visited the Department of Computer Science at the University of North Carolina in Chapel Hill in 1997. In 1998, Dr. Stuerzlinger was appointed to the Department of Computer Science at York University in Toronto, Canada. There, he is a full professor and a member of the interdisciplinary Centre for Vision Research (CVR) as well as the graduate program in Psychology. Dr. Stuerzlinger is a member of the GRAND NCE (Graphics, Animation and New Media Network of Centres of Excellence), where he also serves on the board of directors, a journal editorial board, and numerous international program committees. He has been a program chair for several international scientific events. He is an author of more than a dozen patents and has participated in multiple start-ups. Dr. Stuerzlinger has supervised more than 35 graduate students to completion and published more than 100 refereed scientific papers.

PROGRAM COMMITTEE

- Raimund Dachsel, TU Dresden, GER
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