Tutorial: Designing multi-projector VR systems: from bits to bolts

Date: Monday, April 14th
Time: 09:00 - 12:30 (**Half-day Tutorial**)

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Abstract: Immersive multi-projection environments are becoming affordable for many research centers, but these solutions need several integration steps to be fully operational; some of these steps are difficult and not in a common domain. This tutorial presents the most recent techniques involved in multi-projection solutions, from projection to computer cluster software. The hardware in these VR installations is a connection of projectors, screens, speakers, computers and tracking devices. The tutorial will introduce hardware options, explaining their advantages and disadvantages. We will cover software design and open source tools available, and how to administrate the whole solution, with tasks such as installing the computer cluster and configuring the graphical outputs. An introduction to tracking systems, explaining how electromagnetic and optical trackers work, will be also provided. At the end, we are going to present important design decisions in real cases: the project process, problems encountered, good and bad points in each decision.

This tutorial intends to be basic. Basic knowledge of computer graphics and virtual reality is enough. The tutorial will cover all points present in detail so any student or professional can follow.

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José Miguel Salles Dias holds a PhD (1998) in Sciences and Information Technologies, field of Computer Graphics and Multimedia, at ISCTE, Instituto Superior de Ciências do Trabalho e da Empresa, Lisbon. He received an MSc degree in Electrical and Computer Engineering, area of Electronics, (1988) from IST-UTL, Instituto Superior Técnico, Universidade Técnica de Lisboa. He is Director of MLDC, Microsoft Language Development Center, a Microsoft Development Center. He is appointed as Associated Professor of the Department of Sciences and Information Technologies at ISCTE. He was President of ADETTI, Associação para o Desenvolvimento das Telecomunicações e Técnicas de Informática, R+D Associate Centre to ISCTE, Coordinator of Multimedia and Virtual Environments and Networks and Information Security, Research Lines of Lectures undergraduates and graduates at ISCTE. He is the Vice-President of the Eurographics Portuguese Chapter. http://www.adetti.iscte.pt/

Joaquim A. Jorge holds PhD and MSc degrees in Computer Science from Rensselaer Polytechnic Institute, Troy New York, awarded in 1995 and 1992 respectively. He is currently Associate Professor of Computer Graphics and Multimedia at the Department of Information Systems and Computer Engineering at the Instituto Superior Técnico. He has co-authored over 110 internationally refereed papers on Computer Graphics and User Interfaces. Prof. Jorge is a member of the Eurographics Association and is also affiliated with ACM (SM'07) SIGGRAPH and SIGCHI and is National Representative to IFIP TC13. He has served on the International Program Committees of over 100 international conferences and has organized or helped organize over 25 international scientific events. He is Editor-in-Chief of Computers & Graphics Journals and serves on the Editorial Boards of five other scientific publications, including Computer Graphics Forum. http://web.ist.utl.pt/jorgej/

Alberto Raposo holds PhD and MSc degrees in Electrical Engineering from University of Campinas, Brazil. He is currently a professor at the Computer Science Department at the Pontifical Catholic University of Rio de Janeiro and coordinates the Virtual Reality group at the Computer Graphics Technology Group (Tecgraf) in the same university. His research interests include 3D interaction techniques, real-time visualization of massive models, augmented reality, and collaborative environments. He has co-authored more than 80 refereed publications. (http://www.tecgraf.puc-rio.br/~abraposo)

Bruno R. de Araújo is a PhD Student at the Instituto Superior Tecnico from the Technical University of Lisbon. He is a researcher at INESC-ID and the Intelligent MultiModal Interfaces Group. He participated on European Projects such as SMARTSKETCHES researching advanced interaction techniques for 3D surfacing using Calligraphic interfaces and the IMPROVE project proposing innovative interfaces for immersive and mixed reality. He is interested in large scale display based visualization using PC cluster and multi-projector systems, and participated in the LEME (Laboraty in Mobility and Excellence) at IST related with intelligent ambient and tiled display visualization technology. http://immi.inesc-id.pt/~brar/

Rafael Bastos received a Major degree in Computers and Telecommunications Engineering (2003) and a MSc in Telecommunications and Computers Engineering (2006), both from ISCTE, Instituto Superior de Ciências do Trabalho e da Empresa, Portugal. Since 1999 he has been working at ADETTI, Associação para o Desenvolvimento das Telecomunicações e Técnicas de Informática, R+D Associate Centre to ISCTE, as Researcher in Multimedia and Virtual Environments and Networks and Information Security Line. His research interests are Computer Graphics, Augmented and Mixed Reality, Computer Vision, Signal Processing.
http://virtual.inesc.pt/aicg05/cv.html?name=Bastos,%20Rafael