PERCEPTION&INTERACTION LAB

University of Genoa -DIBRIS

DESCRIPTION OF THE LAB AND RESEARCH ACTIVITIES

The Perception&Interaction Lab is located at the University of Genoa, Italy, at the Dept. of Informatics, Bioengineering, Robotics, and Systems Engineering (DIBRIS). The aim of our research is to develop new paradigms that allow us to achieve an ecological human-computer interaction in virtual, augmented and mixed reality environments. We assess the undesired effects (such as the visual fatigue and the perceptual discomfort) of the new visual technologies (e.g. 3D displays, mobile devices, virtual and augmented reality headsets) on the users, and we evaluate the usability of such technologies in various fields of application. In particular, we study the relationships between the spatio-temporal geometrical structure of VR/AR/MR and the human visual perception.

PEOPLE

Manuela Chessa, PhD – Assistant Professor (manuela.chessa@unige.it - www.dibris.unige.it/en/chessa-manuela and www.manuelachessa.it)

Fabio Solari, PhD – Assistant Professor (fabio.solari@unige.it - www.dibris.unige.it/en/solari-fabio)

Chiara Bassano – PhD candidate

Giorgio Ballestin – PhD candidate

Hussain Razeen – PhD canditate

Elisa Girau, Fabrizio Mura, Monica Roascio, Carlo Sazio – MSc students

EQUIPMENT

Our research is mainly focused on the study and design of low-cost and affordable systems. The main devices in use in our lab are the following:

- VR Head-Mounted Displays (Samsung Gear VR, Oculus Rift, HTC Vive, Cardboards)
- AR Meta Vision
- Smartphones and tablets (Samsung S6, S8)
- S3D monitors and TV
- Tracking devices (Microsoft Kinect, Leap Motion, Intel Real Sense, Optitrack)

COLLABORATIONS

- Dr. P. Kornprobst, Biovision team - INRIA Sophia Antipolis Méditerranée, France
- Prof. P. Bex, Department of Psychology, Northeastern University, Boston, MA, USA
- Dr. F. Bremond, INRIA Sophia Antipolis Méditerranée, France
- Dr. Paolo Pretto, Max Planck Institute for Biological Cybernetics, Tuebingen, Germany
- Dr. Bruno Herbelin, EPFL Center for Neuroprosthetics, Geneva, Switzerland
- Dr. C. Bartolozzi, IIT, Italy
- Dr. Bruno Cessac, INRIA Sophia Antipolis Méditerranée, France
- Dr. Eris Chinellato, Midllesex University London, UK
- Dr. Jean Pierre Bresciani, University of Fribourg, Switzerland
- Dr. Dimitri Ognibene, University of Essex, UK
- Dr. Guido Maiello, Justus-Liebig University Gießen, Germany
- Dr. Andrea Canessa, University of Genoa, Italy

PROJECTS (CURREN T)

- Project VREAD "A new augmented reading experience in virtual reality making reading enjoyable again for low vision people", funded by Université Cote d'Azur (UCA), within call "Pre-maturation" (https://team.inria.fr/biovision/uca-project-vread/)
- Research Activity within the Project "LEADERSHIP TECNOLOGICA - Acquisizione di nuove conoscenze propedeutiche a future applicazioni navali e sviluppo delle tecnologie abilitanti per la leadership tecnologica di Fincantieri - Consulenza ergonomia Virtual Ship" (Trad: Acquisition of new knowledge for future naval applications and development of enabling technologies for Fincantieri's technological leadership - Ergonomics consultancy Virtual Ship) Participants: CETENA S.p.A, IBR Sistemi s.r.l, DIBRIS-University of Genoa

MAIN PUBLICATIONS

M. Chessa, & F. Solari (2017). [POSTER] Walking in Augmented Reality: An Experimental Evaluation by Playing with a Virtual Hopscotch. In Mixed and Augmented Reality (ISMAR-Adjunct), 2017 IEEE International Symposium on (pp. 143-148).

A. Canessa, A. Gibaldi, M. Chessa, M. Fato, F. Solari, and S.P. Sabatini. (2017). A dataset of stereoscopic images and ground-truth disparity mimicking human fixations in peripersonal space. Scientific Data, 4. [doi]

M. Chessa, G. Maiello, A. Borsari, PJ Bex (2016) The Perceptual Quality of the Oculus Rift for Immersive Virtual Reality. Human Computer Interaction, pp. 1-32

M. Chessa, G. Matafu', S. Susini and F. Solari (2016) An experimental setup for natural interaction in a collaborative virtual environment. 13th European Conference on Visual Media Production (CVMP16), 12-13 December 2016, London.

G. Maiello, M Chessa, F Solari, PJ Bex (2015) The (In) Effectiveness of Simulated Blur for Depth Perception in Naturalistic Images PloS one, 10(10), e0140230.

A. Canessa, M. Chessa, A. Gibaldi, S.P. Sabatini, F. Solari (2014) Calibrated depth and color cameras for accurate 3D interaction in a stereoscopic augmented reality environment. Journal of Visual Communication and Image Representation 25(1), pp. 227-237

F. Solari, M. Chessa, M. Garibotti, S.P. Sabatini. (2013) Natural perception in dynamic stereoscopic augmented reality environments. Display 34(2), pp. 142-152.

Complete publication list: http://www.manuelachessa.it/pubblications/