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## **The University is developing a Collaborative Augmented Reality system which can operate up to a thousand mobiles.**

- **Researchers at the School of Engineering (ETSE-UV) provide the basis for this technology through dozens of supporting thousands of users, ie, an advance of two orders of magnitude and thereby expand their applications upon education, leisure industry, among others.**

A group of scientists from the School of Engineering of the University of Valencia (UV-ETSE), led by Professor Juan Manuel Orduña, has developed a Collaborative Augmented Reality (CAR) which can interact appropriately with one thousand smartphones, whose features have been recently published in the Journal of supercomputing. This technological breakthrough allows extending the application of Collaborative Augmented Reality in areas such as education, culture, industry, and even the military field, since this technique facilitates working together and coordinated from remotely located terminals.

Juan Manuel Orduña explains that, until now, it had never been evaluated the performance of the CAR systems based on mobile phones, since mobile phones have the computing power and hardware needed to provide Augmented Reality interactively not long ago. However, since the emergence of smartphones these devices have become very suitable tools for Collaborative Augmented Reality. This work, which also involved researchers from the University of Valencia Víctor Fernández and Pedro Morillo, offers "a reference on how to design systems and Collaborative Augmented Reality on the number of users that can support such systems".

In fact, this group of the ETSE-UV has made the use of this technology goes from dozens to thousand users, ie, an advance of two orders of magnitude and thereby expands its usability. In this sense, the same group of researchers of the ETSE-UV in late 2013 published, also in 'Journal of supercomputing', its conclusions on the benefits of smartphones when used in collaborative augmented reality applications. These benefits vary depending on hardware and operating system that the mobile incorporates (Android, iOS, etc.), and also impose certain requirements on Collaborative



Augmented Reality applications. On the basis of the findings of this study, a simulator that has allowed for the complete study of CAR systems and the improvement of their design was developed.

#### FOR MASSIVE APPLICATIONS

The Collaborative Augmented Reality system developed by the University of Valencia sets the stage to develop massive CAR systems for places with large numbers of people as museums, stations, airports, sports arenas, stadiums, etc., since "we have demonstrated the technology to develop applications where hundreds of people are watching on their mobile devices the same image of the real world, but modified with 3D objects overlaid on each of the phones coordinated basis", the director of the study adds.

Juan Manuel Orduña is professor in the Department of Computer Science of the ETSE-UV. He has published over 120 scientific articles in various media, of which 27 are journal articles in the Journal Citation Report (JCR). He has led several national research projects, and participates in the European Network of Excellence HiPEAC. In 2003, Orduña created the group Redes y Entornos Virtuales (GREV) (Networks and Virtual Environments) of the University of Valencia and has since that time he focused his research on interconnection networks of distributed systems, distributed virtual environments and the development of scalable multi-agent systems. In recent years the group has initiated interdisciplinary collaborations with research groups in the area of Bioinformatics. For his part, Pedro Morillo Tena is Professor in the Department of Computer Science, University of Valencia, institution where he has developed his career since 1998. He has published over one hundred scientific papers on subjects related to Real-time 3D Graphics (Virtual Reality, Augmented Reality and 3D simulation) as well as the Project Management.

More information:

<http://link.springer.com/article/10.1007 % 2Fs11227 -013-0925-8>

<http://link.springer.com/article/10.1007 % 2Fs11227 -013-1082-9>