



## New computing tools for virtual and augmented reality

### DESCRIPTION OF THE TECHNOLOGY

In recent years there has been a notable advance in the development of new computer technologies in the graphic field, such as virtual reality and augmented reality.

These two technologies have been applied mainly in the field of animation and video games. However, there are economic sectors, such as tourism, medicine, marketing or mechanics, that can benefit from these techniques, since they offer an immersive and understanding experience greater than that of the systems usually used.

The ARTEC research group of the Universitat de València, which has extensive experience in interactive 3D graphics, virtual reality, augmented reality and civil simulation, has developed two new augmented and virtual reality tools applied to sectors related to tourism and medicine:

The first tool, called GuiAR, focused on the tourism sector, is software for generating augmented reality content as an audiovisual guide for museums and cultural heritage environments. This tool has been obtained by combining

Bluetooth and sensors integrated into a mobile device, which allows real-time positioning and indirect augmented reality visualization of museum environments.

The second tool, called VirtualMed, focused on the medical field, is a mixed reality software that allows interaction in an immersive way by observing microorganisms and their interaction with the human body on a microscopic scale, as if it were actually inside the body itself human. This is achieved through the use of augmented reality and virtual reality.

ARTEC has extensive experience in offering R & D & I services to both public and private entities. His main lines of research are the following: virtual reality, through the development of applications and technologies that allow environments of great visual quality and technologically innovative. Simulation, which develops low-cost applications aimed at the area of information and research in human factors. And finally, augmented reality, which develops applications and display devices suitable for the needs of each case.

### MARKET APPLICATION SECTORS

The above tools are applicable in the following areas:

- Tourism field: Audiovisual guides for the enhancement of cultural heritage in museum environments and audiovisual guides for the tourism sector, so that tourists can obtain increased information on places of tourist interest, in several languages.
- Educational and recreational field: Treasure hunting games or similar in theme / recreational parks, educational games by discovering additional information linked to specific elements or applications to make historical tours, by means of the possibility of visualizing the state of a specific object in different historical stages.
- Health field: Pharmaceutical companies, chemical companies and medical centers to find out interactions produced between certain elements.

### TECHNICAL ADVANTAGES AND BUSINESS BENEFITS

- The main advantages and benefits of the tourism sector tool are: Contribution of great information due to the visualization of elements in a more immersive way, which improves the understanding of the environment by the user.
- The main advantages and benefits of the tool of the medical sector: Greater understanding of the interaction between microorganisms and the human body.



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### CURRENT STATE OF DEVELOPMENT

The development status of the two tools is complete and available for use. Likewise, the research group has other software tools with applications in other sectors, in different stages of development, from functional tools in operation or available to be adapted to the required environment, to prototypes in the development phase.

### INTELLECTUAL PROPERTY RIGHTS

The technology is protected by intellectual property rights associated with the software.

### COLABORATION SOUGHT

- License agreement for use and exploitation.
- R&D project to advance development.

### RELATED IMAGES

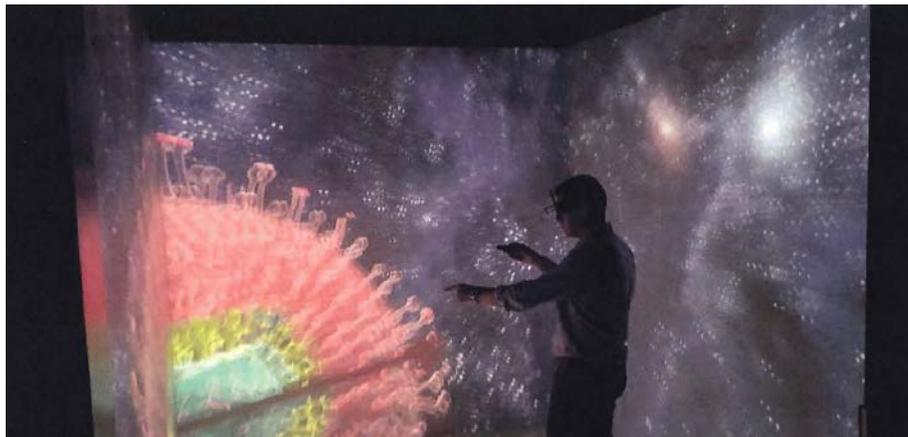


Figure 1: Visualization of a virus using augmented reality.

### CONTACT

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