



IEEE
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AND APPLICATIONS

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VISUAL
COMPUTING
and the Progress of
DEVELOPING
COUNTRIES



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Theme Articles

Visual Computing and the Progress of Developing Countries

22 Guest Editors' Introduction

Alberto Raposo, Soraia Raupp Musse, and James Gain

In many cases, countries' successes can be attributed to technological advancements, and these advancements often in turn rely on informatics that encompass data, information, knowledge, information systems, and information and communication technologies. This special issue focuses on submissions describing innovative visual computing applications in areas related to the progress of developing countries.

24 Underwater Depth Estimation and Image Restoration Based on Single Images

Paulo L.J. Drews Jr., Erickson R. Nascimento, Silvia S.C. Botelho, and Mario Fernando Montenegro Campos

In underwater environments, scattering and absorption phenomena affect the propagation of light, degrading the quality of captured images. A method based on a physical model of light propagation and the use of statistical priors can restore the visual quality of the images acquired in typical underwater scenarios.

36 Using Immersive Virtual Reality to Reduce Work Accidents in Developing Countries

Luciana Nedel, Vinicius Costa de Souza, Aline Menin, Lucia Sebben, Jackson Oliveira, Frederico Faria, and Anderson Maciel

Immersive VR simulators can help reduce the number of accidents in the workplace. Far more effective than traditional safety training measures, the proposed system simulates day-to-day situations and analyzes user reactions to detect behavioral patterns that may lead to an increased predisposition to risk exposure.

47 Evaluating Existing Strategies to Limit Video Game Playing Time

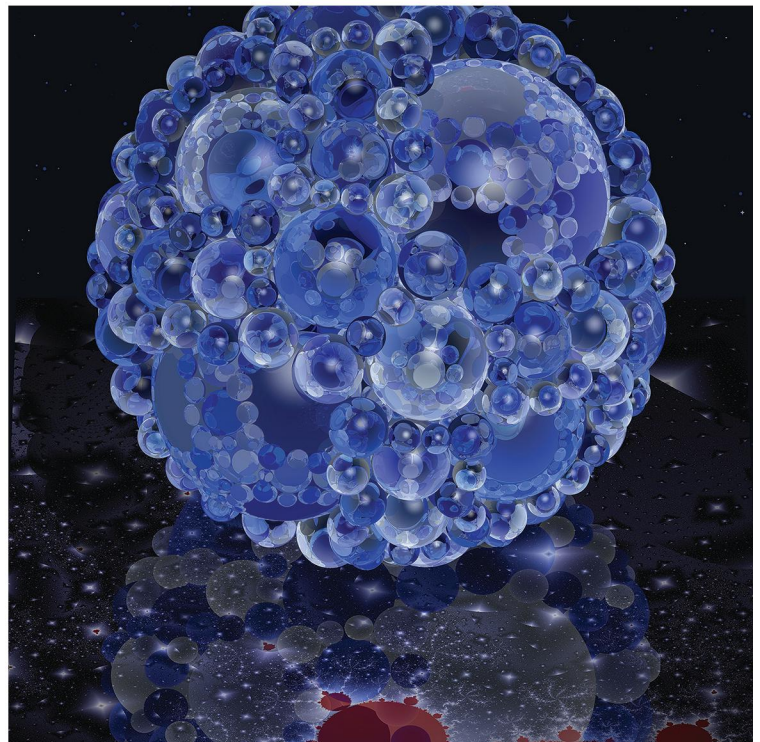
Bryan Davies and Edwin Blake

Public concern surrounding the effects video games have on players has inspired a large body of research, and policy makers have even mandated systems that limit the amount of time players spend in game. This article presents an experiment that evaluates the effectiveness and side effects of such policies on the user experience.

58 Measuring Knowledge Acquisition in 3D Virtual Learning Environments

Eunice P. dos Santos Nunes, Licínio G. Roque, and Fátima de Lourdes dos Santos Nunes

Virtual environments can increase access to learning. The authors present a method to automatically evaluate knowledge acquisition in 3D virtual learning environments using users' interactions. Their results suggest that some types of users' interactions in 3D VLEs are correlated with their learning differential.





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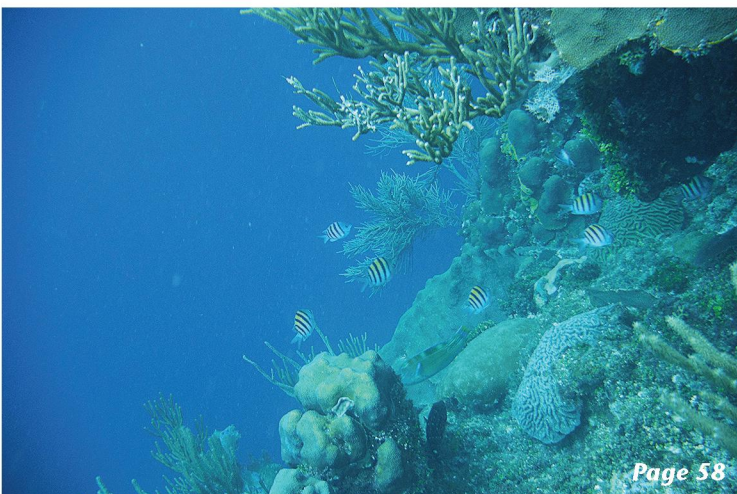
GyroWand: An Approach to IMU-Based Raycasting for Augmented Reality

Juan David Hincapié-Ramos, Kasim Özacar, Pourang P. Irani, and Yoshifumi Kitamura

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Editor's Note

Sungmin Cho and Won-Seok Kim equally contributed to the article, "Upper-Limb Function Assessment Using VBBTs for Stroke Patients," *IEEE CG&A*, vol. 36, no. 1, 2016, pp. 70–78.



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