Perceptual evaluation of illumination effects in virtual environments

Laura Raya, Susana Mata, Óscar D. Robles
laura.raya@urjc.es, susana.mata@urjc.es, oscar david.robles@urjc.es
Universidad Rey Juan Carlos, Madrid, SPAIN

Abstract

In this work, different techniques for the generation of shadows and reflections have been compared in terms of the perceived quality by the final user. Results show that, for the analyzed scenarios, users do not present a clear preference for the images generated with the more sophisticated techniques.

1. Experimental framework

Four experiments were designed to analyze whether the computation of soft shadows and realistic reflections contributes significantly to increase the final perceived quality.

- Experiment 1: Inconsistencies in shadows and reflections

- Experiment 2: Soft shadows using shadow maps versus hard shadows

- Experiment 3: Soft shadows using raytracing versus hard shadows

- Experiment 4: Reflections using raytracing versus precomputed static reflections

2. Results

The analyzed population is composed of 60 subjects (from 9 to 84 years). These subjects were initially classified as experts or non-experts, obtaining a balanced distribution.

3. Conclusions

It can be concluded that the users do not perceive a significant decrease in the quality of the analyzed scenes when using basic shadowing and reflection techniques.

This work has been partially funded by the Spanish Ministry of Education and Science (grants TIN2007-67188, TIN2007-68023-C02-01, CSD2007-00050 and Cajal Blue Brain project).