

Quasi-Photorealistic Indoor Scene Creation, Editing and Navigation as a Service

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ABSTRACT

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Author Keywords

Guides; instructions; author's kit; conference publications; keywords should be separated by a semi-colon.

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ACM Classification Keywords

H.5.m. Information Interfaces and Presentation (e.g. HCI): Miscellaneous

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OBSERVATIONS

Title

The paper title should be shortened: valid alternatives are

- “*Quasi-Photorealistic Indoor Scene Management as a Service*”
- “*Quasi-Photorealistic Indoor Scene Lifecycle Management as a Service*”

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- “*Quasi-Photorealistic Indoor Scene Manipulation as a Service*”

- “*Quasi-Photorealistic Indoor Scene Manipulation and Navigation as a Service*”

Video

For the video, we were thinking about the realization (1/4 of the time) and the navigation (3/4 of the time) of a small museum (4 to 6 rooms), in which are exposed and a few statues and some pictures (simple to realize and impressive thanks to the good translucent effect of the frame glass, each one illuminated by a direct spotlight).

INTRODUCTION

Si deve iniziare contestualizzando le **applicazioni** dei risultati anche futuri e futuribili di una tecnologia di questo tipo, il cardine della tecnologia è il seguente: si mette in condizione l'utente che abbia un minimo di competenze di grafica 3D ed un computer con accesso ad internet di 1) mettere a disposizione di altri tramite un indirizzo web una scena 3D di interno navigabile con qualità quasi-fotorealistica, 2) avendo realizzato tale scena in autonomia sempre collegandosi ad un sito internet.

Introductory argumentations: 1) user-centric 3D application; 2) self-build 3D application.

Enabled practical applications: 1) Collaborative architecture for the end user; 2) virtual web-accessible self-built visits of indoor spaces (inaccessible for any reason).

Enabling social factors. Native FPS gamers feel confident moving in a virtual environment in which instead of shoot zombie or aliens, they can take a look for example of the architectural project of their renewed home.

3D graphics techniques and algorithms are well studied and exploited right now.

The introduction of WebGL offers the possibility to bring to the people via the Web medium brand new and useful experiences.

But the web is accessible from a variety of different devices. Most of them are provided with a limited hardware.

The main contribution of this work is the definition and implementation of a workflow completely based on the Web infrastructure, to let the user create, refine, edit and navigate an indoor 3D scene with a quasi-photorealistic quality.

We hypothesized a system in which any user with a very basic graphic knowhow is put in a position in which, by connecting to a website, he is autonomously able to build a scene, require remote processing and finally make use of the resulting quasi-photorealistic web navigable 3D scene.

Abbiamo ipotizzato un sistema con il quale ogni utente con un minimo livello di conoscenze di grafica 3D, può mettere a disposizione del mondo attraverso un sito web una versione navigabile e quasi-fotorealistica di un ambiente interno da lui stesso autonomamente realizzato, sempre connettendosi ad un sito web, quindi senza necessità di installare (ed eventualmente ancor prima di acquistare) un prodotto software.

USER EXPERIENCE

Scene creation

Rapid feedback gathering

RENDERING MODEL

Quasi-photorealistic techniques

They are:

- Precise physical based shadow rendering (INHERIT THE MOST POSSIBLE FROM BLENDER CYCLE RENDERING)
- Refraction map
- Reflection map
- Skybox
- ...

Enabling Conditions

This section should report about enabling conditions for lightweight render loop, i.e. indoor still scene, for which shadows can be precomputed.

Lightweight Render Loop

It is the case to merely list the numerous precautions and devices enabling such a simplified render loop.

ARCHITECTURE

In this section will be introduced the three constitutive components of the systems:

1. the Editor
2. the Backing service
3. the Navigator

EXPERIMENTAL RESULTS

Experimental data are the salt of the research. It is probably the case to add some data about user interaction, being the paper mainly focused on that aspect.

DISCUSSION

This section is devoted to the comparison with other systems

1. *Ikea FloorPlanner*
2. <http://www.homestyler.com/floorplan/>
3. <https://www.shapespark.com>
4. <http://cgcloud.pro>
5. <http://www.sketchup.com/>

CONCLUSION

Recap of the whole work

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