

Global Illumination Rendering for High-Quality Volume Visualization in the Medical Domain

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Introduction

Global Illumination (GI)

- Group of 3D computer graphics algorithms
- Add more realistic lighting to 3D scenes
- Images rendered appear photorealistic

Methods

Interactive visualization in a reasonable time

- Design and implementation of graphics processing units (GPU) algorithms
- Development of a 3D client application for real-time visualization

Out-of-core direct volume rendering

- Direct volume rendering (DVR) on GPUs for large datasets

Medical Applications

Better understanding of the human body

- Gain insight in internal structures and interactions
- Illustration for medical training / teaching

Pre-operative planning

- Design and construction of implants
- Photorealistic volume reconstructions

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