Depth of Field

Team Name –

GlamourPhong

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Project Objective –

Depth of filed is an effect in photography by which only the objects which are in focus of the camera lens will appear sharp and other objects will appear blurry. Our project objective is to simulate this effect. We will implement several techniques to achieve this and make comparisions among these techniques.

Technical Approach -

There are several techniques available for Depth of Field. We will implement the below techniques:

- Distributing traced rays across the surface of a (nonpinhole) lens (Cook et al. 1984)

  - http://gec.di.uminho.pt/DISCIP/MCGAV/ifr0405/Artigos/Cook-DistributedRayTracing.pdf

- Rendering from multiple cameras—also called the accumulation-buffer technique (Haeberli and Akeley 1990)

  - http://graphics.stanford.edu/courses/cs248-02/haeberli-akeley-accumulation-buffer-sig90.pdf

- Reverse-mapped z-buffer techniques (Arce and Wloka 2002, Demers 2003)

  - http://www.ccs.neu.edu/home/futrelle/teaching/csg140sp2004/docs/GDC2002_InGameSpecialEffects.pdf

Task Breakdown -

Main Task:

- Implementing Depth of Field techniques (Task 1)

  - Formulating models

  - Implementing OpenGL Shaders

- Simulation of results of different techniques (Task 2)

  - Setting of models in the scene

- ◦ Changing different parameters of camera setting
- ◦ Generating Images and Animations
- Comparision and Improvement of different techniques (Task 3)
  - ◦ Comparing different areas of the images

Proposed Schedule of Task Completion -

April 1 – April 12 – Task 1

April 13 – April 20 – Task 2

April 21 – April 27 – Task 3

Expected Results -

We will have shaders for the three techniques of Depth of Field implemented using OpenGL. We will have results of different techniques in image form and animation form and detailed comparision among them. We will also create a website for the project and all the details posted to the website.