Real Time Fur Rendering and Animation via Shell Texturing

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Computer Graphics 2 (4005 - 762)

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Summary:

Pixar's *Monsters, Inc* impressed audiences with the simulation of realistic fur blowing in the wind. It is my hope to gain a better understanding of the techniques used to render fur from early works to current techniques. In this project, I will attempt to develop a fur shader that will respond to 'forces' such as gravity and wind. Regarding the rendering pipeline, this project will target shading and illumination. As the emphasis is on rendering patches of fur and not long strands of hair, the technique to be used in this project is called 'shell texturing', similar to volumetric rendering. In keeping with the traditions of the literature on the subject, the scenes to be rendering will include geometric primitives with the shaders applied. The goal is to run an animation at a minimum of 30 frames per second with the fur reacting to to simulated forces of gravity and wind.

Objectives:

- Develop real time fur shader for arbitrary surfaces
- Animate scene with fur reacting for forces of wind and gravity

System and Software:

- Intel Core i7 2.30 GHz, 8 GB RAM
- OpenGL
- Visual C++, Microsoft Visual Studio

Project Timeline:

- Wednesday, April 18, 2012 - Fur shader applied to arbitrary surfaces
- Friday, May 4, 2012 - Animation of fur shader responding to forces

Final Presentation:

I plan to demonstrate a real time animation on the System described above. Context will be given to this presentation via an overview of the techniques used and troubles encountered during the development process.