Don’t make me angry

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1. Introduction

When in the 70’s television series Dr. Banner changed into the Hulk, the transformation was shown through a quick montage of ripping clothes and close ups. The movie “The Incredible Hulk” however contains a sequence that shows the entire transformation process slowly and without any gaps in the series of events that changes the human sized Bruce Banner into the monster sized Incredible Hulk. This presentation discusses the methods used to non-uniformly transition between two different characters with different topologies, proportions and sizes.

2. Rigging

The animator is presented with a single transformation rig which drives a full set of Bruce Banner deformations and a full set of Hulk deformations. The rig is essentially a rig for Banner which allows the bones to be stretched to Hulk proportions, but independently of muscle mass. The translation of the bones drive muscle deformations and a number of blend shapes to generate an intermediate deforming skin. The final skin then slides and relaxes over the deforming skin.

In order to incorporate Hulk deformations a full Hulk rig with its original proportions is retargeted on the fly to the Banner animation in the background. All muscle firings, tendon motion, etc. are calculated for this hero Hulk rig. An inverse retarget then creates a non uniformly scaled down Hulk at the current Banner size and proportions. The differences between the full size and scaled down Hulk are analyzed and then applied to the Banner skin deformations.

3. Animation

There are four main sets of attributes that drive the transformation: bone size, muscle growth, muscle striation and Hulk progression. The animator can control the timing of when

4. Lighting

Look development was done on different stages of both the Bruce Banner character and the Hulk character. For each look a multi layered set of textures and displacement maps was created. They include maps for relaxed, flexed and emaciated Banner as well as relaxed and flexed Hulk. The Banner look development had to match the actor very closely since the sequence starts out with a live action Banner which then slowly changes into a full CG version. Based on the animation, the rig then generates a large number of animated lighting properties in the form of point attributes on the skin geometry. These attributes can be used to locally select between mixes of these different looks as well as control color shifts and large and small vein growth. The rendering generates multiple mattes and image layers which then can be manipulated further and more precise in the 2D compositing stage.

5. Conclusion

A versatile rig presented animators with a relatively straightforward yet powerful set of controls to manage a complex nonlinear transformation sequence while generating many animated lighting properties at the same time.

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