

Ziva Muscle Simulation in Production

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Figure 1: Enchantress from *Suicide Squad* used Ziva for her full body digidouble. Image Courtesy Warner Pictures. ©2016

Abstract

In this talk, we discuss the use of Ziva muscle simulation in our visual effects pipeline, including a full body digidouble for Enchantress in *Suicide Squad*, Slimer in *Ghostbusters* and sharks for *Megaladon*. We will go over our use of Ziva and the accompanying pipeline integration.

Ziva is a new simulation package offering higher fidelity simulation with faster simulation speeds. It helped us get more physically believable deformations without adding simulation time. We used it for everything from bone deformations to simulating muscles firing, fat squashing, skin sliding and even clothing riding on top of the body.

With Ziva, we also developed a pipeline for procedurally building simulations, with configurable stages to automate the simulation from an animation input through to renderable geometry.

CR Categories: I.3.7 [Computer Graphics]: Three-Dimensional Graphics and Realism—Animation

Keywords: muscle simulation, pipeline, character effects

1 Building Creature Rigs

While general deformer based rigs have been a staple of character work in the industry, there has been increasing demand to achieve more anatomically correct results.

Our approach with Ziva takes this idea further, building entire physically modelled skeleton and muscle systems that can simulate off

one another to give incredibly nuanced and detailed results, while also achieving very fast simulation speeds.

We take a procedural approach to building and simulation the character elements. We start with the skeleton, continuing on to the muscle fibers, fat, sliding skin and clothing. The final result is of higher quality and nuance than could be achieved with older systems and workflows.

This presentation aims to go over the creation of the physical rig layers, and show how it can create a very realistic result in production.

2 Pipeline Integration

The Pipeline integration consists of the Character TD defining stages in a dependency graph. A Stage is a step in the simulation, essentially representing the simulation of a physical layer, though it could consist of other things like publishing of data.

Stages allow for manual breakpoints for a TD to interject, and the procedural caching nature allows for stages to reuse exiting simulation data without rerunning the whole graph.

This procedural graph allows for automatically simulating new animation as well as sharing setups between characters.

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References

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