PackIT. Animating complicated character groups easily

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Figure 1: Image Courtesy Warner Pictures.©2016

ABSTRACT

On Storks, we were asked to design and animate complex structures composed of hundreds of interacting characters. This lead us to develop PackIT - an artist focused approach to efficiently deal with large numbers of characters. Our approach is in contrast to other methods which often rely on simulation or group behaviors.

We treat each character individually and efficiently manage the conversion between rigs and geometry caches, putting the control back with the artist. Using the extensive library of in-house building blocks we reduce development time and impact on the pipeline. As a result of the huge performance gains and reduced scene load times, a single artists can easily complete shots involving hundreds of characters.

CCS CONCEPTS

•**Human-centered computing** →*User centered design;*

KEYWORDS

ACM proceedings, cache, alembic, animation, crowds

1 CHALLENGES

When creating complex structures built out of characters, we found ourselves faced with artists needing tens or hundreds of rigs simultaneously. As show demands increase, so do the complexities of the individual character rigs. We needed a way to allow animators to iterate fast without losing the flexibility of the production rigs.

2 WORKFLOW

We start with a single character rig which is animated as normal. Using a simple interface the artist offloads the rig and converts it into lightweight container consisting of a base transform, geometry cache and pointers to the animation data. This container can be animated, retimed and duplicated many times over, each becoming a new individual.

At any point, the artist can switch between rig and container to animation. Since there are never more than the minimum number of rigs in the animation scene file, each scene is smaller, loads and plays back much faster.

3 BENEFITS OF PACKIT

PackIt requires no adjustments to be made to existing rigs. All animation needs, such as color adjustments, are handled inside the tool.

Since the characters are switched back to rigs after animation is complete, everything passed to lighting without adjustments. When working with a multiple characters based on the same rig we do a form of lazy offloading. Instead of removing and loading the same rig many times, we reuse existing rigs after creating the containers.

We support container instances with time offsets. This makes extremely large groups much easier to build and adjust.

Animation scenes comprising full rigs are big, often as large as 6Gb. This means slow interaction but also load and save times up to 45 minutes. PackIT scenes are typically between 2mb and 20mb and open in under 2 minutes.