Programming Example:

Summary for Advisory Board

Classical methods for motion compression include subsampling, spline fitting, Principal Component Analysis and Wavelet compression. Most successful compression algorithms rely on features of human perception or on knowing the nature of the data that they compress. Unfortunately, none of these baseline methods has been designed especially for motion data.

Nice start - but what is this technique, anyway? Without that, we can't go ahead and approve the talk!

This presentation will introduce a novel compression algorithm especially designed for high quality motion capture data. People are very sensitive to high frequency errors (jitters) and environmental contacts (such as foot-ground contact) in motion. The presentation will include demonstrations of why this is true and how we can design a compression method to pay special attention to such features of animation.

The method will start with a collection of motion capture data and split this sequence into short sequence of frames called blocks. It will then find clusters of blocks (clips and motion) that look similar. Within every cluster, the method creates a compact representation of each block using a spatio-temporal principal component analysis. The loss during decompression during decompression can cause the feet to slide on the ground or filter out important high frequency information. The method then provides a secondary compression method (similar to JPEG for images) for the contact information so that important contact detail can be restored during the decompression.

Good detail here! Looks like high value for the attendees. But will this work in the real world?

Overall, this method provides 30-40 to 1 compression ration with very little visual degradation. It is possible to compress 90 minutes of motion capture data, sampled at 120HZ to under 6MB using this method. Furthermore, small chunks of motion can be efficiently decompressed (much faster than real-time), without decompressing any other frames (random access to the compressed form).

Yes it will! Approve this talk already.

(Modeled on a GDC Submission by Okan Arkan)