Action Synopsis is a method for presenting motion in still images. The method carefully selects key-poses based on an analysis of a skeletal animation sequence, to facilitate expressing complex motions in a single image or a small number of concise views.

These pages show additional results gathered by using the method on various data sources. *Action Synopsis* is described in the “*Action Synopsis: Pose Selection and Illustration*”

Action synopsis examples included in this document are divided into several categories:
- Motion capture data – including simple and compound actions
- Video sequences including home video and sports clips.

For each example we show the resulting motion curve, selected frames, and other results or observations.

Part of the data and rendered images were obtained from mocap.cs.cmu.edu database which was created with funding from NSF EIA-0196217. Other animation data is collected from the following mocap libraries: stockmoves by Motek BV and bvh-files by Animazoo. The Monkey-bar sequence is courtesy of Michael Cohen and his daughter Lena. Oil slick slip and the Back flip original images courtesy of Moshe Mahler and Jessica Hodgins, copyright Carnegie Mellon University. Sports video clips courtesy of Israel Sport5 channel.
Simple Motion: Ballet

Some of the selected key poses:

The resulting composition:

An artistic views of the composition:
Note the clearly visible peak of the handstand. It is caused because the motion aspects correlate at that point, confirming that it is an extreme position, speed, skeleton angles, and skeleton angular speed.
Simple Motion: ‘Walk Jump’

Analyzing this sequence using PCA instead of RMDS had generated the following result shown on the right curve. Although the jump is still visible in the result the significant motion curve lacks the features and gestures.
Simple Motion: ‘Oil Slick’ Slip

Note: The curve above shows only the first 3 dimensions from a 9 dimensional curve. The selection algorithm has used the full 9 dimensions, and this is the reason why selection points are not necessarily the extreme points in the shown curve.

A low dimensional curve shows an example of an over-constrained motion curve. Note the large gap created in the low dimensional motion curve.
This clip includes a motion with severe occlusions between the different poses. Both illustrations handle it in different ways.
Compound Motion: Cartwheel

The prioritized selection of points can be used to show the low priority poses as ghosts.

Action synopsis 4 pose selection

Uniform sampling 4 pose selection

9 poses shown according to their selection priority presents the complete action.
Compound Motion: Man Sneaking

Note the clearly dominant extreme points which can be used to segment the sequence to the various compositions.
Compound Motion: Breakdance

The last artistic view shows the complexity of the sequence. Overlapping and compound motion makes it very difficult to summarize.

Some of the key poses:

The resulting composition:

Artistic views of the composition:
Home Video: Monkey-Bar

An example of a cyclic motion without any extreme poses. Various selections of key poses can be used.
Home Video: Pirate Ship

One of the early attempts to examine repetitive, simple skeleton (single joint) movement. The pirate ship swings and the motion aspects used are the ship’s angular speed and center location.
Here we selected the first 4 frames (shown in the top row), and added 4 frames according to their priority (shown in the lower row). The result shows the addition of details between the two sets of frames.
Sports Video: Long Jump

Examine the repetitive motion, where any arbitrary selection can be made, and the actual jump where the center of the jump is the most distant point from the circle.
This selection shows the non-even distribution of the selections in the high jump, where the selection focuses on the actual jump action.
Sports Video: High Jump 2

This is an especially difficult clip to analyze and compose due to the fast panning and zoom of the camera.
Sports Video: Ice Skating

Here we used both skaters skeletons for the dimensionality reduction. Additional aspects can be utilized in this case.