

# PERFORMANCE CAPTURE PIPELINE

HOW DO YOU ACCURATELY TRANSLATE A BEAUTIFULLY NUANCED MOTION CAPTURE PERFORMANCE ONTO A 3D CHARACTER? OR, AS IT'S USUALLY DESCRIBED AFTER A MOCAP SHOOT "WHAT HAPPENS TO MY DATA NOW?".

## SELECTS

The first thing to do is select the takes and frame ranges of mocap data you want processing. These "Selects" are usually made using the video files recorded during the capture session. This helps avoid paying an external mocap studio for data that won't get used or having your mocap department waste time processing unnecessary data.

## RAW DATA

The process begins with the "Raw Data". This is the per-frame data recorded by the motion capture system from all the trackers. The most common types of mocap data are translational optical ("point cloud") data and rotational Inertial Measurement Unit (IMU) data for the body, and single or multi-angle video files for the face.

## TRACK

Next, the raw data needs to be "Labelled" and "Tracked" to correct any errors created during the capture process. For example, relabelling any incorrectly identified markers ("swaps"), or rebuilding any missing frames of data caused by occlusion ("gaps").

## SOLVE

The tracked data is then "Solved" onto an avatar rig that matches the proportions of the performer or prop object. This usually generates a Forward Kinematic (FK) skeleton for the body and prop, and animated controllers or per-channel blend shape values for the face.

## REVIEW

At this point, the solved data can be compared to the original video reference to check the quality and accuracy of the solve and help identify any discrepancies.

## RETARGET

The approved data is then "Remapped" or "Retargeted" from the avatar rig onto the character animation rig. The aim here is to preserve as much of the original performance as possible, while adapting it to fit the character.

## MOTION EDIT

The final stage is "Motion Editing" (the crucial step everyone thinks they'll never need). The remapped data is refined and enhanced to meet the technical and artist requirements of the project. This can include correcting issues created during the remapping process; refining prop, scenery, and character interactions; combining multiple takes into a single performance; creating looping or transitional animations; and restoring missing detail and enhancing the overall posture, gesture, and weight of the motion to suit the character.

Hopefully, this give you a small insight into some of the work that goes on behind-the-scenes by some incredibly talented people after "wrap" has been called on a mocap shoot.