

DSX Tutorials

The DSX Suite's objective was rapid, robust, and reliable bone pose estimation from radiographic image sequences. The DSX Suite of applications covers all aspects of tracking objects (bones, implants, etc.) from Biplanar videoradiography images and volume based models of those objects.

DSX is a software suite, which means there are multiple applications and multiple tutorials for each application.

Datasets

The following datasets used for the tutorials are available to DSX customers on request.

1. SampleKneeStudy
 1. The subject is a male who has had his right ACL reconstructed. The CT data does not contain tantalum tracking beads. There are some circular bead-like spots on some slices, but they do not appear in the Xrays. Three trials for the left knee are provided in the folder for tracking, so you only have to segment the left femur and tibia from the CT. This data set can be used to learn xManager, Surface3D, Orient3D, CalibrateDSX, and X4D.
2. SampleKneeBeadStudy
 1. The subject is a left cadaver knee. The original CT data is not available, but the segmented .raw files for the femur, tibia, and patella are provided. This data set can be used to learn xManager, Orient3D, CalibrateDSX, and Locate3D. In addition, you could use the .raw files to perform model-based tracking in X4D and compare the results to the bead-based results from Locate3D.

Note: As you are following the tutorials there are opportunities for saving files to disc. We recommend that these **new** files be saved to a folder different from the original data folder. Multiple files with similar names are bound to be confusing for other members of the laboratory, or for yourself in the future.

xManager

1. [xManager Basics](#)
2. [How To: Create a Subject](#)
3. [Using the Subject Populator](#)

CalibrateDSX

1. [How To: Correct X-ray Images and Perform 3D Calibration](#)
2. [How To: Collect Calibration Images](#)
3. [How To: Digitize Points of Interest](#)
4. [The Importance of Image Smoothing and Downsampling](#)
5. [Video Tutorial on Calibration](#)

Orient3D

1. [How To: Define the LCS of an Object](#)
2. [How To: Define Regions of Interest on an Object](#)

X4D

1. [Getting Started Tracking Bones](#)
2. [How To: Track Multiple Bones](#)
3. [How To: Optimize Xray/DRR Settings](#)
4. [How To: Calculate Bone Poses from Mocap Data](#)

Surface3D

1. [Surface3D Basics](#)
2. [How To: Segment Image Data and Create Surface Models](#)
3. [How To: Work with Multiple DICOM Stacks](#)
4. [How To: Import Third-Party Image and Surface Files](#)

Locate3D

1. [How To: Digitize Points of Interest](#)
2. [How To: Track Objects Using Points of Interest](#)

PlanDSX

1. [How To: Use PlanDSX](#)

Motion Capture

1. [How To: Use Motion Capture Data](#)
2. [How To: Modify the Knee Model](#)
3. [How To: Calculate Bone Poses from Mocap Data](#)

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