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Working with C-Motion's Dynamic Stereo X-ray Software Suite

C-Motion Biomechanics Software

Advances in diagnostic imaging have greatly improved our ability to detect structural changes in musculoskeletal tissues. There is now evidence that subtle joint translations of only a few millimeters are critical to estimating key clinical measures such as tissue stress, joint impingement, or implant kinematics during loaded functional movements. Dynamic Stereo X-ray (DSX) is the only currently available technology that can achieve sub-millimeter accuracy for a wide variety of functional movements. This workshop shows attendees how to use C-Motion's new DSX Software Suite to calibrate their equipment, correct X-ray images, and track multiple bones in the images.

This workshop will expain:

1. Calculating the 3D pose of the X-ray sources and image planes from images of the calibration object, including uniformity-corrections, distortion-corrections, and X-ray image resizing.

2. Using bone models extracted from CT, define anatomically meaningful reference frames, add landmarks, and define regions of interest. Track bones in X-ray trials using single frame or 4D optimization. 3. Export bone tracking to Visual3D for joint animations and kinematic analysis, including the calculation of joint congruency and ligament lengths. Validate markerless bone tracking with bead tracking.