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Visual3D

With Visual3D, you can accurately analyze 3D movements using your own data, analysis techniques, marker sets, and data capture systems.

Visual3D is **hardware independent**: collaborate, share data, and analysis results in a consistent manner, regardless of the motion capture system used.

Modify, enhance, update, or even replace underlying motion capture systems without affecting any existing data or studies in progress.



Sift

Tailored for users handling large biomechanical datasets, Sift is your solution for seamless data analysis with no exporting necessary. Load multiple CMZ libraries simultaneously, simplify data management, and effortlessly handle complex databases.

Dive straight into your datasets with a variety of visualization tools, cutting-edge analysis techniques, and seamless integration of the Visual3D engine into this stand alone application.

Data Sources Markerless Read in pose estimation data from 3D markerless motion capture systems including Fujitsu, KinaTrax, and Theia. Marker-based Automatic integration with all major mocap vendors and custom model building for any marker set. Complete support for C3D file format, and now can save as HDF5 file format. Forces Integrate force platforms into your analysis for inverse dynamics and other kinetic analyses. EMG Bring EMG data into your motion capture analysis to offer a richer picture of how a movement happens. IMU Visual3D reads in and builds 3D models from select vendors. <i>See our technology integration partners for a full list of sensor modalities and file formats that we support.</i>	Explore Queries Generate queries automatically based on signals present in your library, or custom make them: -Time-normalize to event sequences. -Refine based on signal characteristics. Visualize Data Explore queried data with a range of plot types including: -Signal vs Time. -Bar Charts. -Box Plots. -Signal-Signal. -Scatter Plots. Animations and Video Connect your time series and metrics back to the underlying movement by animating files or opening the reference video.
Fully Custom Pose Estimation Automatic Model-building Visual3D offers automatic model-building for 3D markerless and IMU systems. 6 Degrees of Freedom Visual3D implements 6DOF (segment optimization) for pose estimation. Inverse Kinematics Visual3D implements Inverse Kinematics (global optimization) for pose estimation.	Quality Assurance Curve Registration Remove unwanted phase variance by registering signals on internal events or landmarks. Exclude Data Mark signals and metrics for exclusion from your analysis, without deleting them. Anomaly Detection Run automated anomaly detection routines to easily exclude data or flag trials for a closer look.
File Management Multisubject Support Visual3D supports processing multiple subjects in the same movement trial. Multiple Static Files Allows multiple static calibration trials to be used for applying to movement trials. Handles each subject separately for computing means, normal data, metrics, etc. when working with the CMZ Library. Tagging Files Process different types of subjects (eg. BATTER, PITCHER) differently by leveraging subject tagging in your pipeline.	Analysis Principal Component Analysis (PCA) Find the dominant modes of variation within your data, using PCA, for dimensionality reduction. Statistical Parametric Mapping (SPM) Run statistical testing across an entire waveform using SPM. Supports one- or two- sample t-tests and ANVOVA tests. Dynamic Time Warping (DTW) Identify outliers or most-similar traces with Dynamic Time Warping. Use signal-based distances to triage where you look first.

Caltester



CalTester provides configuration and calibration information of motion and force measurement systems. Find the accurate position, orientation, and corners of a force plate. Integrates with [instrumented treadmills](#) and [force structures](#).

Batch Processing

Batch Processing

Codify analyses so that the same steps can be applied to every batch you work with. Harmonize processing across projects, across labs, and across time.

Directory Watchers and Time-based triggers

Have Sift [watch directories](#) of interest and immediately process motion capture data as it appears, or, run the same analysis at the same time, every day.

Pipeline

Use Visual3D's analysis [pipelines](#) to automate your workflows and to harmonize analyses across projects, across labs, and across time.

Events	Signal	Metrics	Force	Model	File
Create, identify, and manage signal events in your data.	Process , manage, and compute time-based signals throughout your workspace.	Calculate and determine discrete quantitative values.	Create and manage force platforms and force structures . Assign recorded forces to model segments.	Build and modify models applied to C3D motion files.	Open, manage, and save files throughout your workspace.

Sift is designed to integrate seamlessly with [Visual3D](#). Where Visual3D is primarily a session-based tool for processing motion capture data, Sift lets researchers take their Visual3D results and process them at study-level. Users can leverage the power of the Visual3D engine by running pipeline commands on loaded CMZ libraries directly through Sift's interface. At its heart, Sift is all about helping researchers through the knowledge discovery process: [collecting](#), [cleaning](#), [shaping](#), and [analysing](#) their data before communicating their results.

To learn more how Visual3D works, visit [Visual3D](#)!

To learn more of Sift, visit [Sift](#)!

Learn more about HAS-Motion at the [company website](#). Plus check out our [blog](#) for overviews of new features and discussions of the biomechanical literature.

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