











Tools for Preparing Motion Data

Below is a list of available packages made available by members of the OpenSim community to convert experimental data into OpenSim format. In using these utilities, we ask that you respect the hard work of your fellow researchers by citing their work appropriately. Please carefully review the publications and cite the references in your future papers and presentations. No guarantees about quality, correctness or support are provided by the SimTK team or OpenSim team. Use at your own risk. Please consider contributing. If you would like to have your project included on this site, please contact opensim@stanford.edu.

Package		Brief Description	Platform	Authors	License	Included Materials	Last Updated
OpenSim 4.0		OpenSim 4.0 has incorporated methods for reading C3D data via the API. Further information can be found on the C3D (.c3d) Files page.	Matlab, Python, GUI Shell	OpenSim Team	Custom	Online documentation and utility scripts.	Ongoing
MOtoNMS		MOtoNMS is a Matlab toolbox able to read motion data stored in C3D files and process markers trajectories, ground reaction forces, and EMG signals for OpenSim and CEINMS.	Matlab	Alice, Mantoan, Monica Reggiani	GNU General Public License	Extensive online documentation, example data	Ongoing
GaitExtract Toolbox171		Matlab toolbox to assist in extracting kinematic, kinetic, and EMG information directly from a C3D file for use in OpenSim. The scripts can be configured for any laboratory configuration.	Matlab	Tim Dorn	MIT License	PDF Instructions and Example data	Jan, 2011
Matlab_Opensim_Tools_v2		Folder containing a number of functions for processing data from C3D files to OpenSim format and for generating setup files and running scale/ik/id from the matlab command line.	Matlab	Glen Lichtwark, Ayman Habib, Rod Barrett	MIT License	Readme instructions and example data	August, 2013
OpenSMAC 1.0		This project contains a utility program (OpenSMAC) that converts motion files from a Motion Analysis Corp. system (TRB and ANB files) into a format supported by OpenSim (TRC/MOT). It can also convert C3D files if you have a valid license and hardware key for SIMM and the Motion Module.	Motion Labs C++ plugin	Peter Loan	Custom	PDF Instructions	Dec, 2009
Lee-Son's Toolbox		This toolbox converts VICON motion capture data into OpenSim inputs. Converts data into *.trc (marker trajectories) and *.mot (force plate data) files.	Binary (.exe) files	Sangjun Lee and Jinkyoun Son	MIT license	Manual, Example data	Sep, 2013
Preprocessing Utilities or Download here		A set of matlab scripts for preprocessing experimental data to put it in format expected by OpenSim. These scripts were developed by Ajay Seth to process C3D from Gillette Children's Specialty Healthcare.	Matlab	Ajay Seth	Custom		Aug, 2008
External load Utilities or Download here		A Matlab script, with examples, to generate GRF .mot files and an external loads setup file compatible with OpenSim 2.4. The script works with standard gait lab GRF data from pre-2.0. A README file with instructions is included with the download.	Matlab	Sam Hamner	Custom		Jan, 2012
C3D Tools by BSN Labs		C3D Tools is freeware for exporting marker, analog, and forceplate data. Exports .trc and .mot files compatible with Opensim.	Standalone exe (Windows only)	Soroosh Bagheri	Custom		2019
STO / TRC / MOT File Plotter		This Matlab tool allows the user to load up to 4 different files that use sto, trc and mot extensions. The user has the possibility to add a TAG name for each file and this TAG name will be used as legend to plot the selected data in the next window. The user can also extract ALL or only the desired data in a mat file.	Matlab	Emmanuel Ayad		Utility scripts	2020

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