C3d2OpenSim Documentation

# Quick Start Guide

1. Download and unzip the btk-matlab\_64 binaries windows.
2. Get the motionProcessing source code from the Github repo. Either a) Clone repo to your local machine b) Download Zip folder of source and unpack
3. Put folders for both btk and motionProcessing in your matlab path.
4. Type ‘c3d2Opensim’ in matlab. If successfully installed, a selection tool will pop up instructing you to select a c3d file. Select a standard c3d gait trial to test, or use a test c3d file located in the ‘motionProcessing/tests/testData’ directory.
5. Edit the ‘Set Manual Values’ in the c3d2Opensim.m file convert files based on your own lab/data setup.

# Introduction to OpenSim

OpenSim data format and typical conversions required

Lab cooridinate systems

force application

Units

# c3d Readers

## b-tk (biomechanics toolkit)

, Arnaud Barre and Stephane Armand

loadc3d(), Glenn Litchwark

Data structure required

Vicon Pecs, James Dunne

# Conceptual pathway of data from c3d to OpenSim

Figure 1: Conceptual flow (left column) of data going from marker data (blue) through to force Data (orange) in ordered steps. Right column shows the corresponding parent functions performed in order. Functions in green represent generalized code that is non-specific of type.

# Function Documentation

## rotateCoordinateSys()

rotateCoordinateSys( struct of/or matrix nx3, rotAxis, Rot)

Takes a structure of nx3 matrices or a single matrix (nx3), rotation axis (string) and an angle (degrees). Rotates matrix data along axis (x,y,z)

Input - oData - either a nX3 matrix or a strucutre containing matrix variables eg oData.LASI = [nx3]

rotAxis - string denoting which axis the rotation will be around eg rotAxis = 'x'

Rot - The rotation about rotAxis in degrees Rot = 90

## filterData()

## forces2Global()

## grfProcessing()

## copCalc()

## connectBody2Forces()

## PrintMot()

## PrintTRC()