SimTK

0. Convert a SIMM model to the OpenSim XML file format.

gait.jnt
SIMM joint file for the 21 DOF gait model.

gait.msl
SIMM muscle file for gait.jnt. There are 92 muscles.

simmToXML
simmTOXML gait.jnt gait.msl gait.sim

User Actions

a. *If the generic OpenSim gait model (**gait.sim**) is not available, generate one from SIMM joint and muscle files (**gait.jnt**, **gait.msl**) using the command "**simmToXML gait.jnt gait.msl gait.sim**". This command can be used to convert any SIMM model to an OpenSim file format. The gait model has 21 degrees of freedom (45 generalized coordinates) and is actuated by 92 muscles. These models are downloadable from the OpenSim project on www.SimTK.org.*

b. *Edit the setup file **subject_setup_scale_ik.xml** to specify the settings for the scale command. All parameters, input files, and output files are specified within this setup file. Detailed comments are contained within the setup file describing each parameter, input file, and output file. There are no restrictions on the names of files, although the conventions as shown below are typically followed. In the file names below, it is assumed that the user will make the appropriate substitution for "subject".*

c. *Execute the command "**scale -Setup subject_setup_scale_ik.xml**". This command produces a new OpenSim model (**subject.sim**) scaled to the particular subject that will be used in all subsequent steps in the workflow. The next step is solving the inverse kinematics (**ik**) problem.*

gait.sim
Generic gait model. OpenSim models use the .sim file extension.

subject_setup_scale_ik.xml
Setup file for scaling and inverse kinematics. Input parameters and files are specified here.

subject_scaleFactors.xml
File containing manual scale factors. Manual scale factors are optional and can be either embedded in the setup file (subject_setup_scale_ik.xml) or kept in a seperate file as shown here.

markerFile.xml
File containing additional markers or edited markers for overriding the standard marker properties contained in the gait model (gait.sim).

subject_scale.trc
File containing tracked marker data used for scaling a model. This is often a static trial.

subject_markerPlacement.trc
File containing tracked marker data used for relocating segment markers. This is often a static trial and can be the same file used to scale the model (subject_scale.trc).

subject_coordinates.mot
Motion file containing model coordinates used to relocate segment markers. The coordinates are used to place the model in a desired position, and then designated segment markers are moved to match the marker locations in subject_makerPlacement.trc.

Experimental Data

1. Scale a generic model to a particular subject and move segment markers to match experimental marker locations.

scale
scale -Setup subject_setup_scale_ik.xml

subject_scaledOnly.jnt
SIMM joint file after scaling. The model and marker positions are scaled only; marker positions are not moved.

subject.msl
SIMM muscle file after scaling.

subject.jnt
SIMM joint file after scaling and marker relocations. Segment markers are moved based on marker placement settings in the setup file.

Visualize in SIMM

subject_scaleFactors_applied.xml
File containing the scale factors used to scale the gait model as determined from the marker data.

subject.sim
OpenSim gait model scaled to subject, with segment markers relocated to match experimental marker data.

2. Solve the inverse kinematics problem.

ik