GUI Guide

7th February 2022

MATLAB GUI Script Description

Script/Button	Platform	Description
c3dExportLoop/Generate files	Matlab GUI	Writes marker and force data from C3D file to .trc and .mot file formats
ScalingProcess/Scaling	Matlab GUI	Scales models
setupAndRunIKBatchExample /Inverse Kinematics	Matlab GUI	runs multiple inverse kinematics trials for the model
setupAndRunIDBatchExample /Inverse Dynamics	Matlab GUI	runs multiple inverse dynamics trials for the model
setupAndRunSOBatchExample /Static Optimisation	Matlab GUI	runs static optimization operation for the model
setupAndRunRRABatchExample /Residual Reduction	Matlab GUI	runs Residual Reduction Algorithm Tool
setupAndRunCMCBatchExample / Computed Muscle Control	Matlab GUI	runs Computed Muscle Control Tool
setupAndRunFDBatchExample / Forward Dynamics	Matlab GUI	runs forward dynamics trials for the model
trcGaitEvents /Get gait events	Matlab GUI	gets any trcpath (all TRCs as structs) then calculates gaitEvents in the flowing format: Left HS, Left TO, Right HS and Right TO
dflow/DFLOW	Matlab GUI	reads the txt file from DFLOW and finds where the belt velocities (including perturbations)

Data_Collection_OpenSim_Auto /Collect Data	Matlab GUI	gets all data from the TRC, Mot, MoS, etc files and write it into MATLAB file
IK_results/Plot_IKResults	Matlab GUI	Visualisation tool for plotting IK results
ID_results/ Plot_IDResults	Matlab GUI	Visualisation tool for plotting ID results
runOpensim	Matlab GUI	Using the OpenSim library

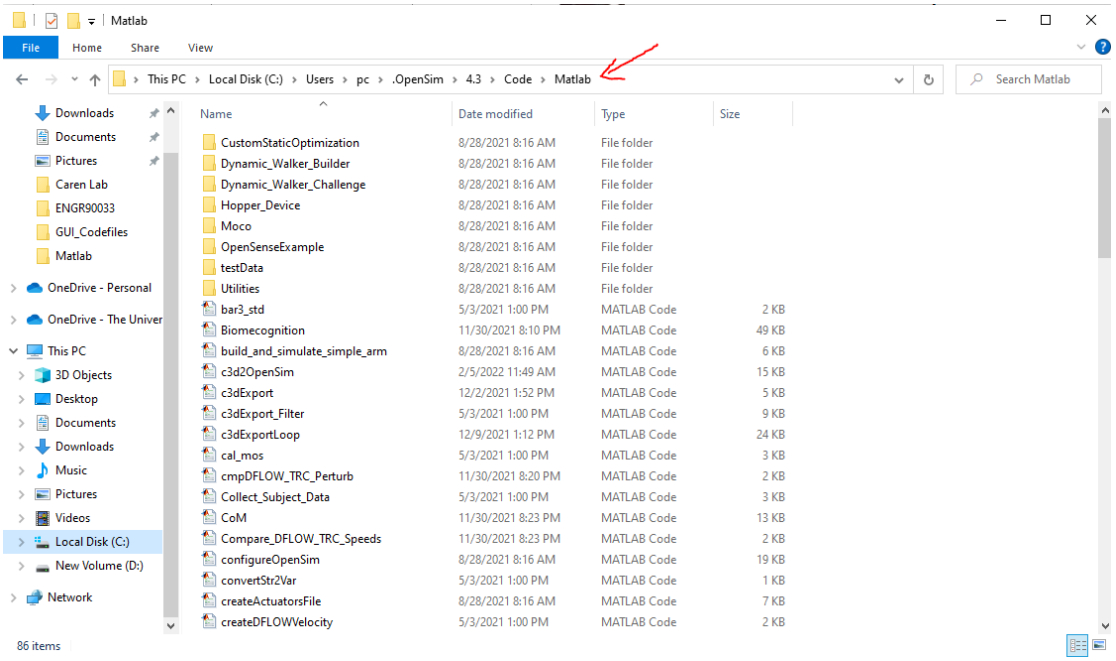
MATLAB GUI Button Description

Button	Platform	Description
Select path	Matlab GUI	Select the path of your OpenSim Matlab directory
Select your 'Data' folder	Matlab GUI	Select the your data folder
Generate files	Matlab GUI	Runs the program to generate trc and mot files
'xxxxx'_TargetSearch (eg. IKXMLs_TargetSearch)	Matlab GUI	Select the folder that contains the respective setup files
Select DFLOW folder	Matlab GUI	Select the folder that contains the DFLOW txt files

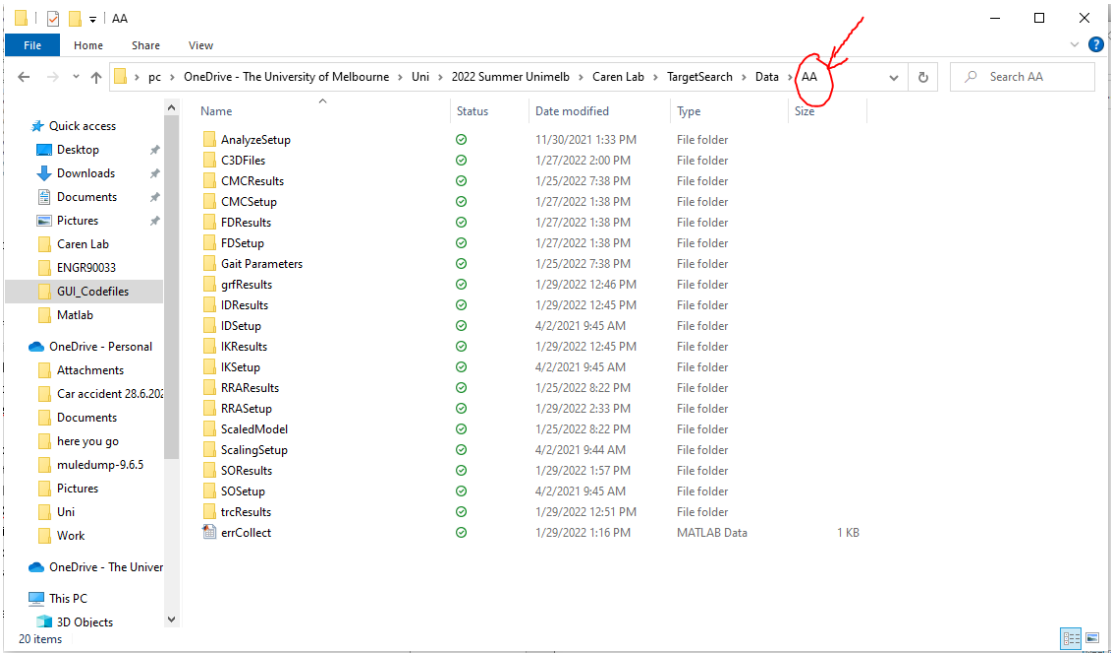
User instructions:

The Matlab GUI simplifies the process of calculating the experimental data into useful files. Users can follow the step by step guide for this GUI:

1. First, select the path to your OpenSim Matlab code folder. (Normally it will look this ...\Documents\OpenSim\4.3\Code\MATLAB)



2. Then select the Data folder where you keep all the C3DFiles and where you want the results to be saved. (Name of the file might not be called *Data*)



3. With step 1 and 2 complete, the **Generate files** button will now be enabled, and you can click on it to generate the trc and mot files.

4. The next section of the GUI will have seven **TargetSearch** buttons. Each of these buttons will enable another button after you have selected the setup files for the relevant operations. (Eg. If you want to perform a Scaling Process, you would click on the **ScalingXMLs_TargetSearch** button to select the Scaling setup files, then click on the **Scaling** button to perform the operation. *The other operations follow the same steps*.)

5. After performing the relevant operations. You can use the **Collect Data** button to store all your result data into relevant Matlab data files (.mat).

6. This is followed by two extra functions, which is the **Get gait events** and **DFLOW**. Where they will carry out their functions respectively.

7. The next two buttons, **Plot_IKResults** & **Plot_IDResults**, are visualisation tools. They require three inputs (Trials, Side and Joint) before plotting the IK and ID's in a figure.

8. If at any point, you restart or close the GUI. It is important to repeat step 1 and 2, which is selecting the path and data folder before you continue using the GUI.