# Running the App

* Open Matlab
* Make sure the current directory contains the app. (Simulink\_Movement\_App.mlapp)
* Open “Simulink\_Movement\_App.mlapp”
* Click run
* The app will appear on the screen (Shown below)

Graphical user interface, application

Description automatically generated

* Fill out each of the fields under panels titled “MetaData”, “Simulation Data”, and “Model”.
  + This can be done by clicking the corresponding buttons to each field.
    - i.e “Select metaSegment” button will open a finder window in which you can select the .csv file that contains the segment parameters for the model you wish to run.
  + The only field that you cannot use a button to populate is the “File Name” field
    - In this field you simply type in what you wish the data file to be named
* If you wish to generate metaTables, fill out the panel titled “Subject Information”
  + Press the button “Generate metaTables”
* If you wish the metaTables to be populated with metaTrial and metaTrialType data for each trial, make sure the “Fill metaTables” checkbox is checked
* Click “Initialize Video”
  + The Simulink model should run for the specified movement
  + You can check to make sure the movement was performed correctly in the “Mechanics Explorer” that pops up (Shown below)

Graphical user interface, application, Word

Description automatically generated

* If you are planning to use some of the same parameters for future experiments, you can save the configuration of the window for a future time.
  + Simply type in a name for the config file under the panel “Configure GUI” and click “Save”
  + To reload this saved configuration, simply type the name of the same config file and press “Load”
    - You should see the fields populate to the characters they were when you saved the config file.
* To play back a video, first specify the number of times you want the movement to play in the “Number of Reps” field under the “Playback” panel.
  + Click “Playback Video”
  + You should be able to see the “Mechanics Explorer” play the simulation for the number of reps that you specified.
  + Note: You can only use the “Play Video” button once you have already loaded a simulation using “Initialize Video”. That must always be done first for each movement.

# Creating Movements

* Movements for the model to Simulate are defined in a .csv file.
* The .csv files can be organized as the example below.

Table

Description automatically generated

* Movement files DOF information are defined based off of metaDOF file (Shown below)

Table, Excel

Description automatically generated

* For the movement .csv, you define which DOFs are being moved (or having its initial condition, IC, changed from the metaDOF file) by inputting the correct idDOF and sDOF
* You then define each DOFs movement range (nRangelist\_move field) and initial condition during the trial (nIC).
  + These values are to be in radians
* Save the movement files in a folder titled ‘movements’ in the same path as the Simulink app.
* Note: You could define every DOF of the model in the movement files if you wanted to for organization sake. However, to define a movement you only need to input information for the DOFs involved

# Other Notes

* When generating metaTables, a folder titled “CSVs” will be created within the Data Path.
  + This is where the metaTable files will be placed
* When using the button “Play Video”, time stamps will be created with each rep.
  + A folder will be created called “TimeStamps”
  + .mat files of the date and time of each rep of each particular movement will be placed in there
* Be sure to change the “File Name” field for each trial