Tutorial 7 – Verification Optimization

The Verification Optimization tool is used to perform a “dry run” Design Optimization without including any “design elements”, the goal being to ensure a good initial guess and to verify the appropriateness of the optimal control problem formulation.

The tool accepts the same inputs as the TO tool, but in general, the results directory of a TO run is used for both the initial guess and tracked quantities. The cost function terms for the VO tool include controller tracking and, for uncontrolled joints, generalized coordinate tracking. Similar to the TO tool, the VO tool includes constraint terms for kinetic consistency, state position periodicity, state velocity periodicity, and root segment residual load bounding. If a VO problem is well formulated, it should converge quickly since the initial guess is already at the optimal solution.

1. **Before running VO:**
2. Open the OpenSim model “RightLegAndPelvis.osim” in the OpenSim GUI.
3. **Setting up a Torque Driven VO settings file:**
4. Activate the NMSM GUI in OpenSim by navigating to “Tools>User Plugins”, and click “rcnlPlugin.dll”
5. With “RightLegAndPelvis.osim” selected in the OpenSim GUI, navigate to “Tools>Treatment Optimization>Tracking Optimization”
   1. The following window should be opened:

A screenshot of a computer

AI-generated content may be incorrect.

1. Set the input Osimx file as “RightLegAndPelvis.osimx”