Synchronize Animation Tutorial

Tutorial: Match Various Data Types Using Synchronize Animation

Purpose

To familiarize users with the ability to match various types of data on the same screen using the Synchronize Animation utility.

Problem

In this tutorial you will:

- Create a three-window page layout and load a different type of data into each of the three windows.
    - In Window 1, load animation data from the file `a3frtapp.kn3`.
    - In Window 2, plot time versus linear acceleration for the lower torso, upper torso, and head resultant acceleration.
    - In Window 3, load video data of a physical crash test from the file `iihs2.avi`.
- Synchronize the animation of all three windows by incorporating scale and/or delay factors through the Synchronize Animation utility.

Files

This tutorial uses the MADYMO results files `a3frtapp.kn3` and `linacc`. The first file contains animation data for a dummy and airbag impact simulation. The second file contains plot data for the same simulation. The third file, `iihs2.avi`, contains high-speed digital video of a physical crash test. These files are located in the <install_directory>\demos\mv_hv_hg\animation\animation_sync directory.

Step 1: Load animation data from the MADYMO file `a3frtapp.kn3`.

1. From the ***File*** menu, select ***New*** to clear the contents of the HyperView session.
2. Set the window mode to ***Animation***.
3. From the ***Load Model*** panel, load the file `a3frtapp.kn3` for both ***Load Model*** and ***Load results***.
4. Click ***Apply*** to load the animation data.

Step 2: Set up a three-window page layout and open the AVI file `iihs2.avi` in Window 3.

1. From the ***Page Layout*** dialog, select the three-window layout  .
2. Activate Window 3 (bottom left window).
3. From the window mode selector, select ***Video***.
4. From the toolbar, click the ***Open File*** button.
5. Select ***Files of type: Windows AVI files (*.avi)***.
6. ***Open*** the file `iihs2.avi`.

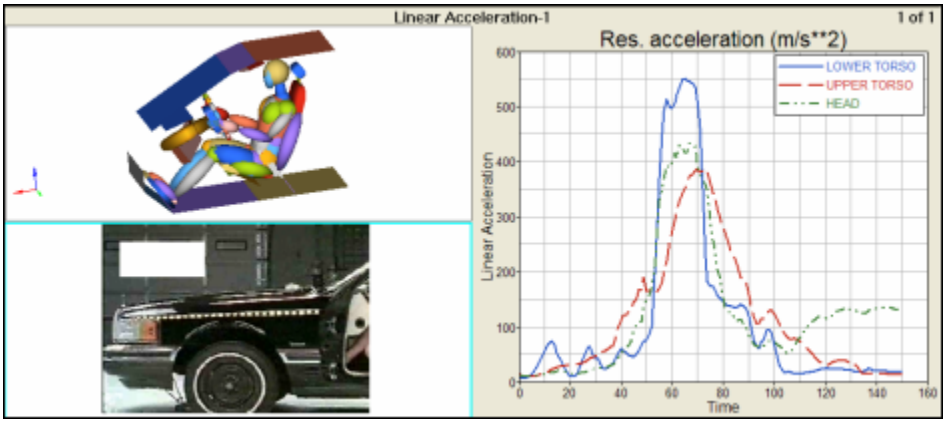
Step 3: Plot XY data curves from the MADYMO file `linacc` in Window 2.

Using the ***Build Plots*** panel in a single plot window, plot time versus linear acceleration for the lower torso, upper torso and head resultant acceleration.

1. Activate Window 2 (right window).
2. From the window mode selector, select ***Plot***.
3. Leave the plot type set to XY plot.
4. Go to the ***Build Plots*** panel.
5. From the file browser button, open the file `linacc`.
6. For ***X type***, select **Time**.
7. For ***Y type***:, select **Linear Acceleration**.
8. For ***Y Component:***, select **LOWER TORSO**, **UPPER TORSO**, and **HEAD**.

   To select more than one component, press the **CTRL** key while selecting components.

9. For ***Y Channel***, select **Res. Acceleration (m/s**2*)**.
10. Click ***Apply*** to create the XY data curves.



Result of loading the various data files

Step 4: Synchronize the animation, XY plot and video data.

Synchronize the animation of all three windows, using the Synchronize Animation utility.

1. Leave the animation mode set to ***Transient*** and animate the page's windows.
2. Notice the animation, plot and video windows are not synchronized.
3. Stop the animation.
4. Activate Window 1, the animation window.
5. Go to the ***Utilities*** menu and select ***Synchronize Animation***.
6. Move the ***Current Time*** slider to 0.019, the frame just before the airbag opens in the Window 1.
7. Click the ***Set*** button next to ***Window 1, Synced Time 1***.
8. Move the ***Time Slider*** to 0.14, just after the head bounces off the airbag and ***Set*** it for ***Window 1, Synced Time 2***.
9. Since the data in Window 2 is from the same source as Window 1, set the same times as Window 1.
10. Move the ***Current Time*** slider to 17, the frame just before the airbag opens in the video, Window 3 and ***Set*** it to ***Window 3, Synced Time 1***.
11. Move the ***Time Slider*** to 45, just after the head bounces off the airbag in the video and ***Set*** it for ***Window 3, Synced Time 2***.
12. Click ***Apply*** and close the dialog.
13. Animate page 1 and observe that the events are now synchronized.
14. In the ***Animation Controls*** panel, click ***Time Scales,*** and observe that scale and delay factor for the first 3 windows are assigned.