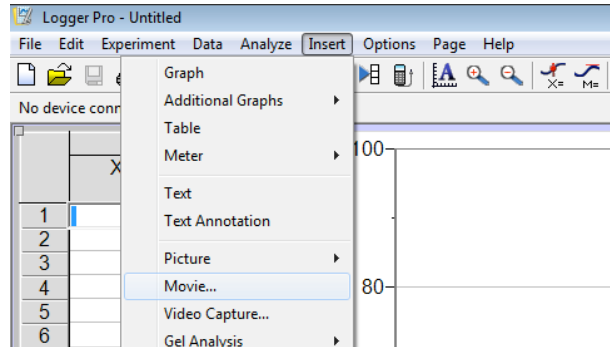# Video Analysis Using LoggerPro

Importing Video clips into LoggerPro

1. Launch the **LoggerPro** application.

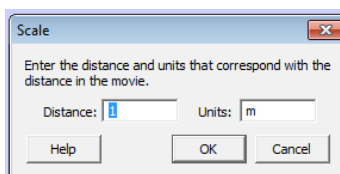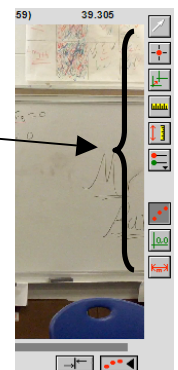2. From the **Insert** menu, choose **Movie…**

3. Navigate to the "Downloads" folder and choose your video clip. The video clip should open in a new windowpane. There are control buttons at the bottom of the pane, which allow you to play, rewind, or step through the frames of the video.

Play Stop Rewind Back/Forward 1 Frame
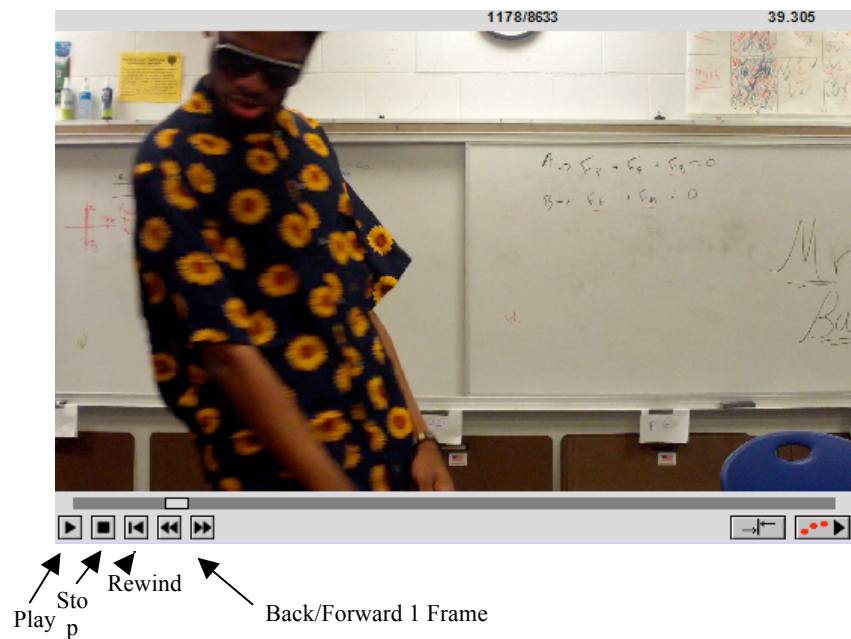
Marking the Video

4. Clicking on the ⟨•••▶⟩ button at the lower right will open an additional palette of tools.

5. Begin by clicking on the ruler button, ⟨▦⟩ , to set a scale.

6. Click and drag the mouse along the length of the reference object in the video.

7. Enter the appropriate value and units in the resulting dialog box.

Scale

Enter the distance and units that correspond with the distance in the movie.

Distance: 1   Units: m

Help   OK   Cancel

8. Rewind the video to the first frame, or step through to the point in which the motion of interest begins.

9. Logger Pro will automatically make measurements at points you designate. To do this, it needs to know where the coordinate axes are. You need to think carefully about where to place the origin and how you want to orient the axes. Click the "set origin" button ⊞ on the sidebar. When you click on a point on the video, the coordinate axes appear with the origin at that point. If you want to change where the origin is simply click a new spot on the video. The yellow circle on the axes indicates the positive x direction.

10. Click on the Add Point button ⊡ to begin making measurements. As each measurement is made, a dot will appear on the screen. The video will automatically advance to the next frame as each measurement is taken.

Analysis

11. The default graph created by LoggerPro displays both x- and y- positions vs. time.

12. You should also make a velocity-time graph. To add a new graph, go to the top of the screen, click on "insert" and choose "graph." To change the variable displayed on the Y-axis, click on the Y-axis label. A menu will pop up, chose "More…". Select **both** X-Velocity and Y-Velocity and click "Ok". Once this is done type crtl-r to auto-arrange the screen.
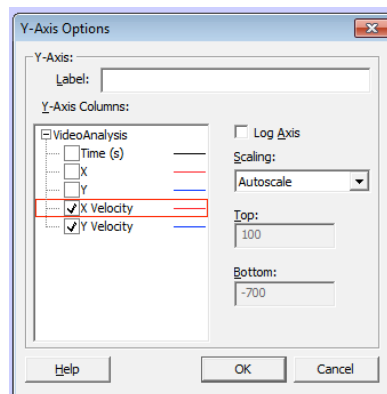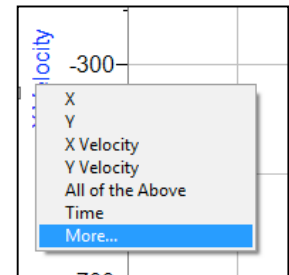
13. Logger Pro can tell us the equation of our graphs. If the graph is a straight line, first click the graph to select it, and then click on the "Linear Fit" button. Now the line and equation show up on your graph.

14. If the graph is not a straight line click the "Curve fit" button. A new window will open with a picture of your graph and lots of "General Equations". You can pick one of these general equations to try to fit your graph to by selecting the equation and then clicking the "Try Fit" button at the bottom of the window. This will give you a preview of what the fit looks like compared to your graph. Select the one that makes the most sense and then click ok.

15. Prepare a whiteboard with the position-time graphs on the left and the velocity-time graphs on the right. Below each set of graphs include a mathematical model for the x and y directions (four models total).