Using the Capture and Process software for Lab 1 ECE1270

Required files:

HP54645DtoMatlab.vi or AG54622DtoMatlab.vi
(Located on the class website or in the documents folder of lab computers)

Getting Started

The capture software listed above is a way to capture data from the scopes provided at the ECE student labs benches into the Matlab® environment for processing. This functionality is provided by a LabVIEW® application called a VI (Virtual Instrument).

To launch the capture application you need to select the right software program based on the scope at the lab bench. Launch the application *model_num*toMatlab.vi by double clicking the application icon. (*model_num* is AG54622D or HP54645D)
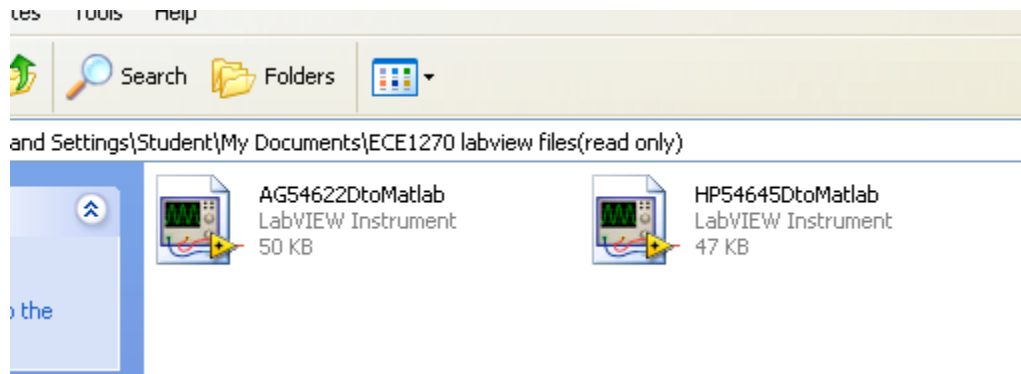
This should launch LabVIEW, the VI and a Matlab window. (***Do not close the Matlab window or the application will have to be close and restarted***).
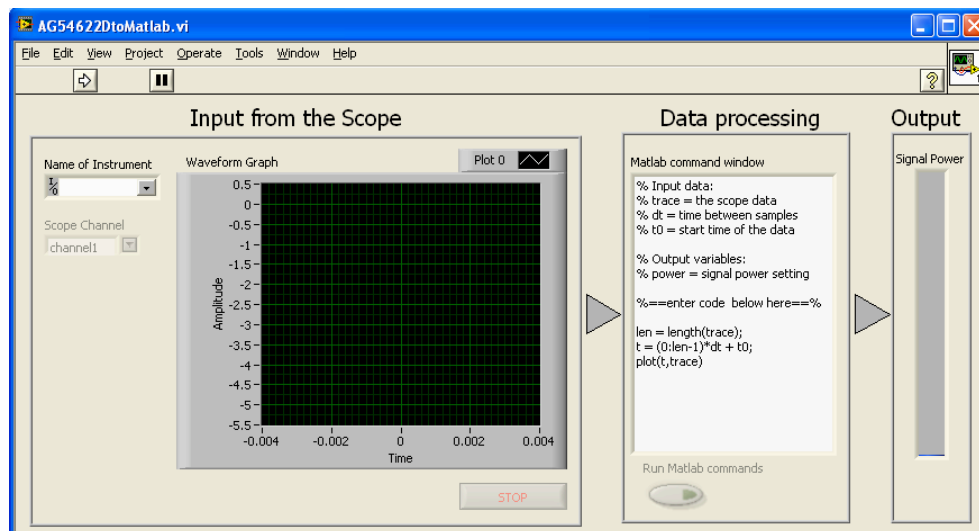
The Interface

Figure 1 – Capture Interface

The interface will look approximately like Figure 1 (depending on version).
Before capture is started you should set up the oscilloscope to the setting for capture manually. Things like the time base of the signal, type of coupling and amplitude scaling should be set to capture the most important parts of the signal on the display of the scope.

To start capture:
1. Set the Name of Instrument by using the drop down list. (GPIBx::7::INSTR for AG54622D scope or GPIBx::2::INSTR for HP54645D where x depends on the system but is not important)
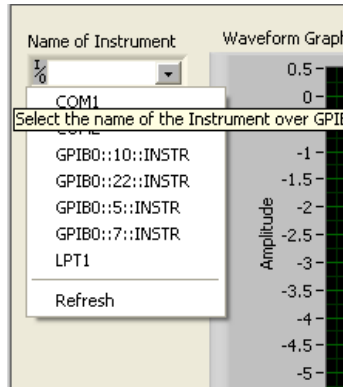

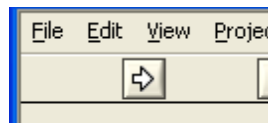Figure 2 – Naming the instrument

2. Click Run

Figure 4 – Run button

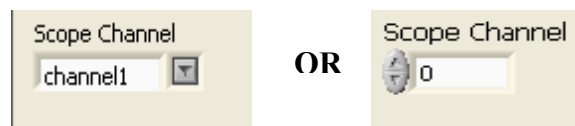3. Select the channel to capture from the scope

Figure 5 – Channel Selection

The waveform graph should now be updating in the application about every second.

Processing captured data with Matlab®

With the application running and setup to capture a desired channel, the data can be processed in Matlab. A Matlab scripting window is integrated in to the application so that you can process the trace data without jumping between applications.
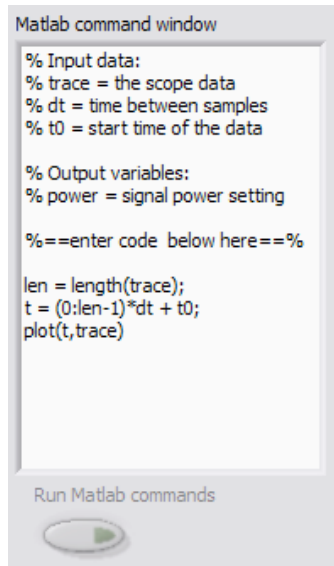
Figure 6 - Matlab script window

Any standard Matlab commands are available from this interface but all output is suppressed. Also note that some of the routines that require dialogs would not function.

Update the code in the command window to include any operation that are needed for the lab and then click the "Run Matlab commands". The comments outline variables that are created by the capture function of the scope (ie.. trace, dt, and t0) and the system defaults to plot the data in a figure window.
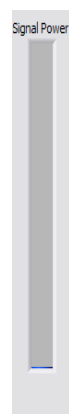

Figure 7 – power scale

If you would like, a power calculation can be outputted back to the interface to control the meter at the right edge using the variable "power". The scale of the meter is set from 1 to 100 so a multiplier must be used to represent the max and min of the scale per your system. If a line is added to the set "power" the meter will update each time the "Run Matlab command" button is clicked.