

## ME 447 Web Motion Control Experiment Processes Description

The implementation of the ME 447 Web Motion Control Experiment consists of 2 main components communicating with one another via the serial port. These two main components are a local CPU in the laboratory and the real-time hardware that controls.

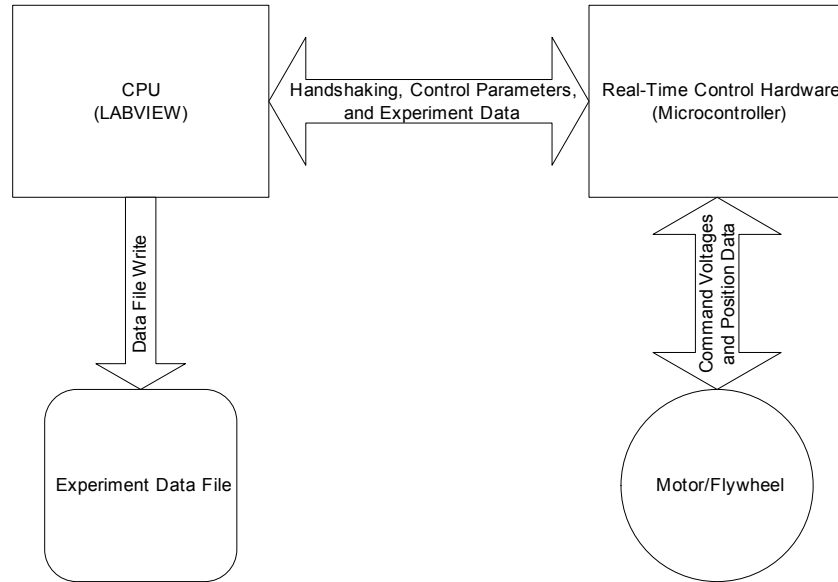


Figure 1: Web motion control experiment block diagram showing main components.

### LABVIEW Flow of Execution

LABVIEW code is relatively explicit in its flow of execution as a result of its block diagram, graphical programming structure. However, the following list of tasks chronologically outlines the flow of execution LABVIEW commands on the local CPU.

1. Open and initialize the serial port for communication with the control hardware.
2. Format parameters to be sent, via the serial port, to the control hardware.
3. Send a 'w' character to the control hardware to acknowledge that it is ready to send the control parameters.
4. When the control hardware sends back an 'r' character to acknowledge that *it* is ready, an 's' character immediately followed by the control parameters are sent to the control hardware.
5. When the requested number of samples has been received, format the data corresponding to those samples.
6. Update the LABVIEW front panel plots and write a spreadsheet formatted text file (with comma delimited columns and end-line delimited rows).

## Real-Time Control Hardware Flow of Execution

The flow of execution of the real-time control hardware is most easily represented by a flow chart.

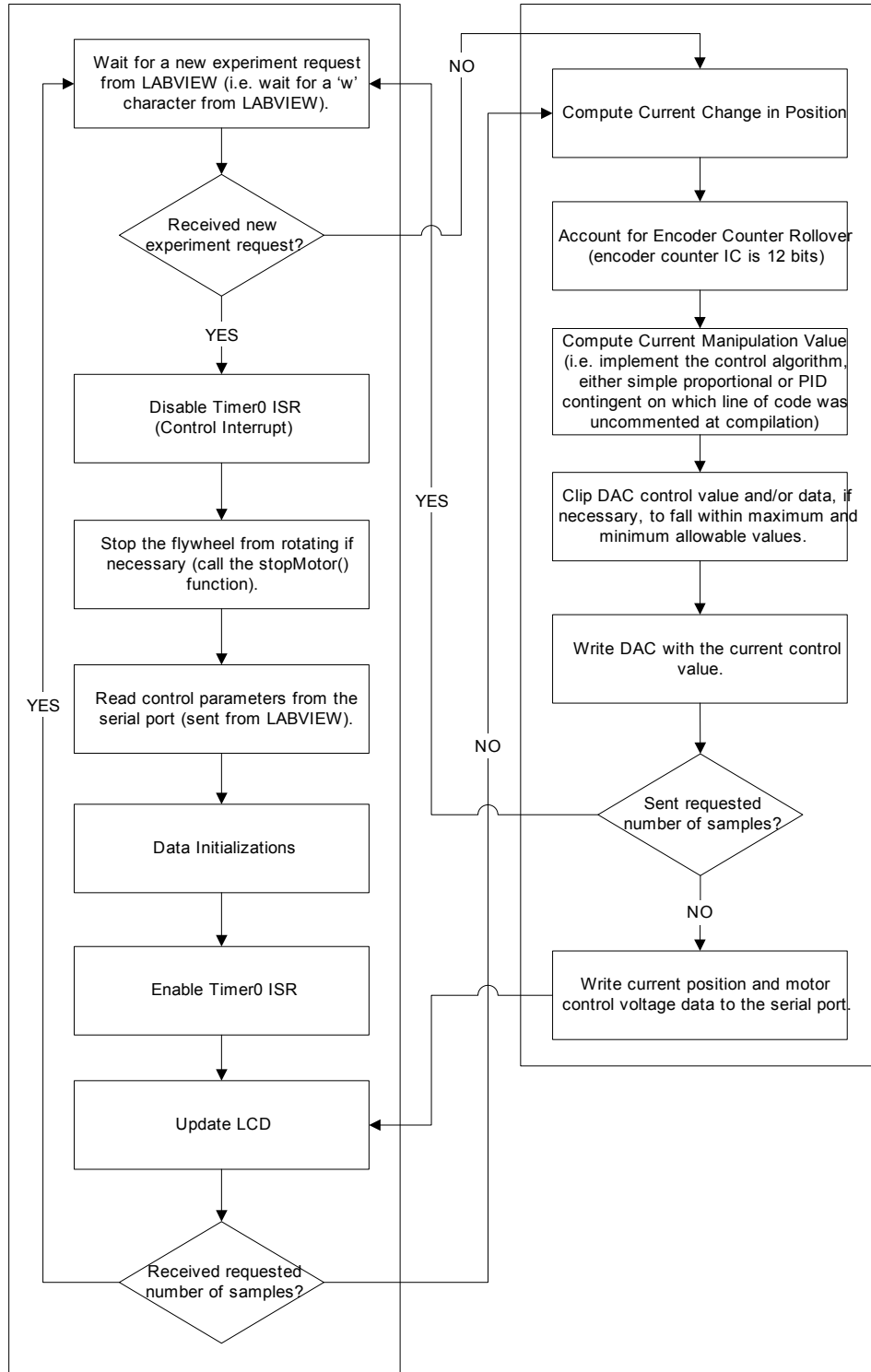


Figure 2: Flow chart showing the flow of execution of the real-time control hardware.