Experiments for EE324: Control Systems Lab

1. DC Motor Position Control via DAQ cards and Matlab Real Time Windows Target

   Targets:
   a) Design and implement an embedded linear (PID) feedback controller using the matlab real time windows target
   b) Interface the embedded controller with a motor driver circuit using the NI DAQ cards installed on the computer
   c) Design and implement a motor driver circuit using L293D or equivalent to drive the dc motor in both directions

   Refer to the schematic diagram below (Figure 1). The blocks represent the main components of the experiment. Your lab assignment consists of figuring out the actual simulation method in Simulink and developing the hardware interconnections required to satisfy the above targets. Finally you are required to to achieve the following design specifications for the dc motor position control. For a step command of 180 degrees, the dc motor should satisfy less than 1sec rise time, 1. 5 sec settling time and 10% overshoot.

   Please get the TAs to check all hardware interconnection before powering on the circuits. Some initial help in setting up the Simulink toolboxes will be provided by the TAs. You are required to figure out the rest yourself.

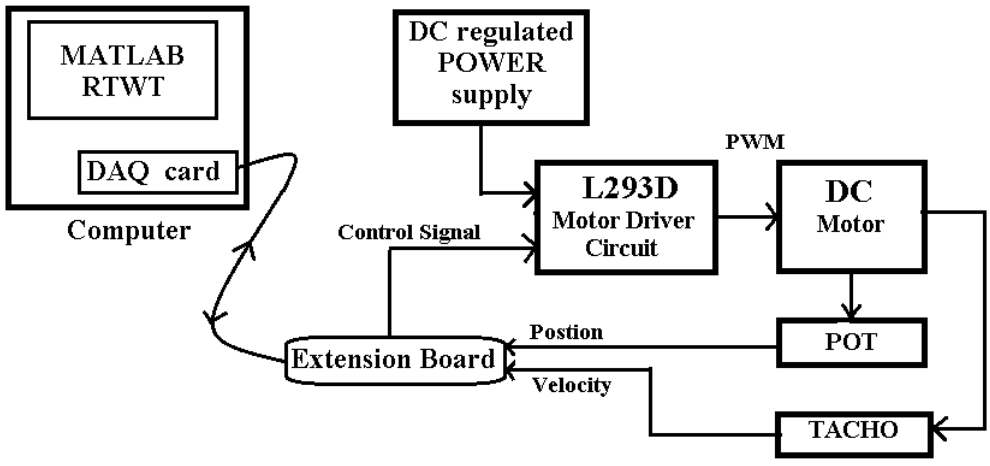

Figure 1