Electrical Design: System Circuit Diagram
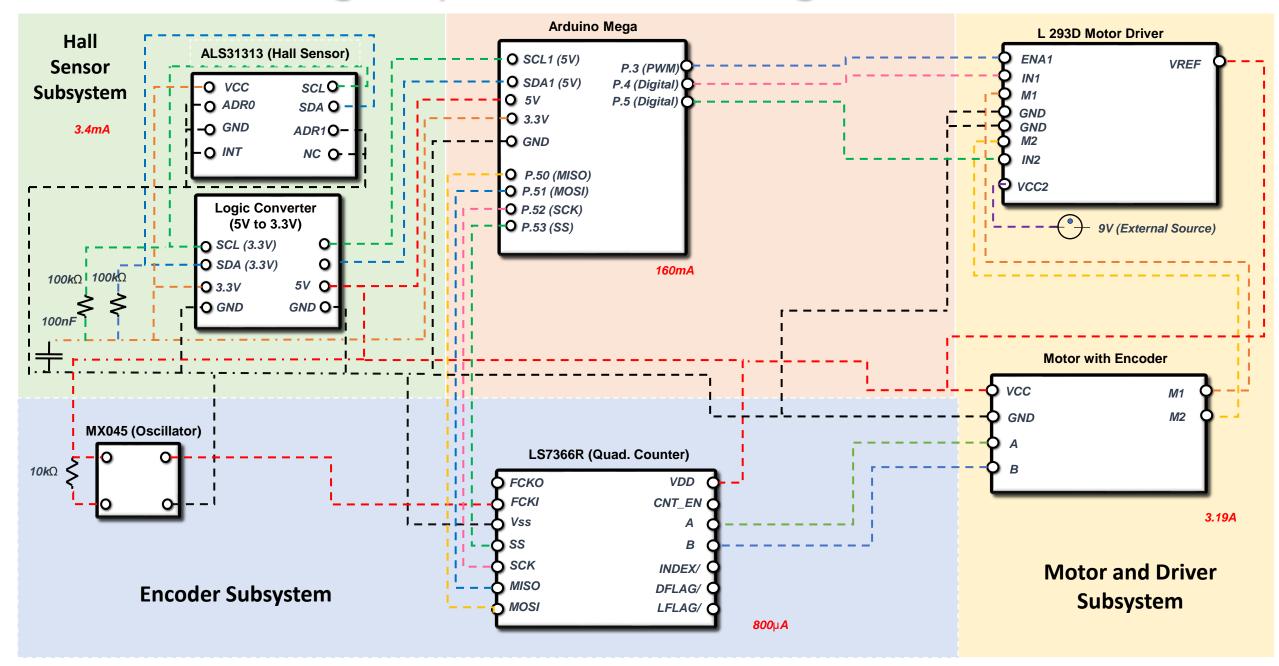
System State Machine

Button Press

State 0 : Waiting for Button Press, Polling

State 5 : Outputting and Reading Hall Sensor Data

Button Press

Default

State 1 : Start Timer1 to enable encoder readings

State 4 : Start MsTimer2 for Hall Sensor Reading

Default

Button Press

State 2 : PI Control to Move Motor until desired reference angle

State 3 : Waiting for Button Press, Polling

Error (Reference Angle – Encoder Reading) < ±2 degree