Project: PID controller

1. Summary
   Controls is one of the important subsystems of a self-driving car and in this project, we are required to implement a PID controller to keep the car in the lane. PID controller stands for Proportional, Integral and Differential controller. Based on the amount of error (Current - desired), the terms mean the following:
   P – Change the plant output proportional to the error
   D – Change the plant output based on rate of change in error (how fast the error is gaining or losing)
   I – Change the plant output based on accumulated error over time.

   I manually tuned the gains of the PID controller.

2. Shortcomings
   According to me, I think the following are the shortcoming of my approach. But it‘s a good place to start with.
   a. Limited speed, the car moves out of lane at more than 50 mph.
   b. Lane keeping isn’t smooth
3. Possible improvements
   As always, there is room for improvement
   a. Lane keeping at higher speeds can be achieved by implementing a PID based speed control based on the amount of deviation from center – basically, slowing down at turns.
   b. Look into other controllers like MPC.

Happy Learning!!!
Santosh.