Ackerman PID Controller

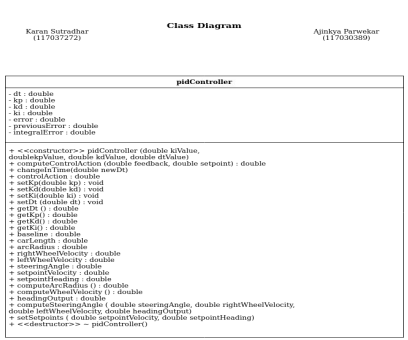
Overview:

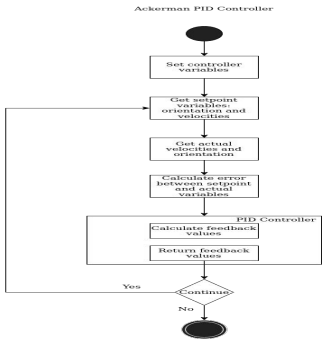
1. We are implementing a PID based controller for an ackermann steering system (kinematic model) working on a feedback loop with a maximum steering angle constraint. The inputs are robot target heading and velocity, output steering angle and the two drive wheel velocities, demonstrating the convergence of the actual components to the set points.
2. Nowadays, automation is needed in every industry and control systems in very important part of automation systems. If we consider an autonomous vehicle without PID controller to reach a point X from example it won't reach precisely to that location due to external factors. So we use closed loop system.
3. The autonomous vehicle industry will benefit.

Methodology:

1. We are programming it on C++
2. Autonomous industry has done it before.
3. The risk involved is overshooting. It can be solved by obtaining an open-loop response and determining what needs to be improved. Adding a proportional control to improve the rise time. Adding a derivative control to reduce the overshoot. Adding an integral control to reduce the steady-state error. Adjusting each of the gains.

Implemented Plan:





Time Line:

1. Proposal - 10/06
2. Implement - 10/15
3. Final Implement- 10/18

Expected Results:
Steering angle for the vehicle

Budget:
150 $