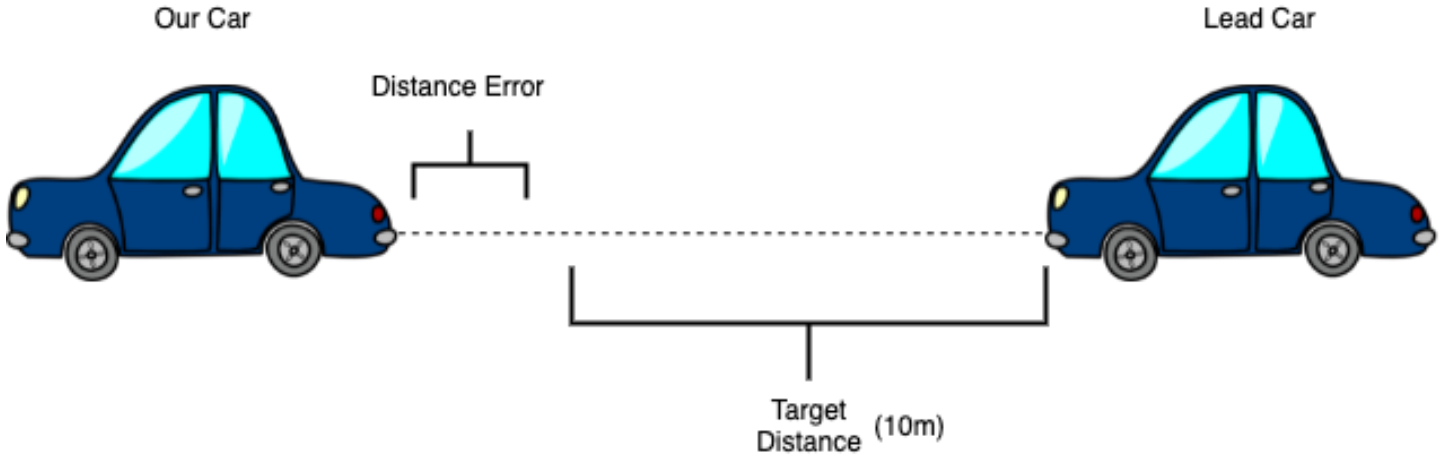
Control Systems Engineering Module

By: Vaishnavi Himakunthala, Allan Garcia, Philly Lim, and Cece Gant

Mentor: Sharad Shankar

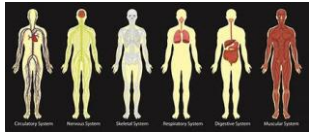
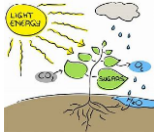
• Worldwide - light vehicles with adaptive cruise control 2033 | Statista

Big Picture



10,510,750 vehicles produced in 2020 had automatic cruise control.
33,039,370 vehicles projected to be produced in 2033





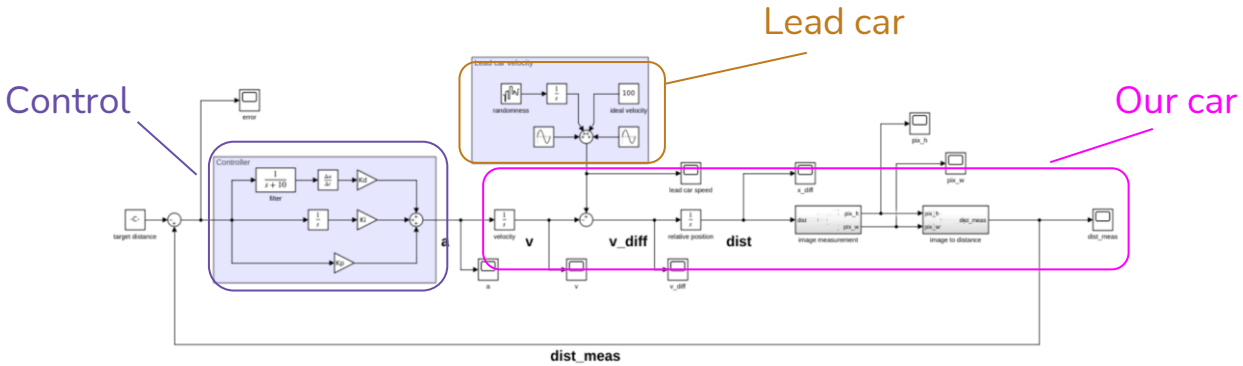
Project Goals

1. Safety- making sure the maximum absolute distance error is kept at a minimum.
2. Average absolute distance error is consistent

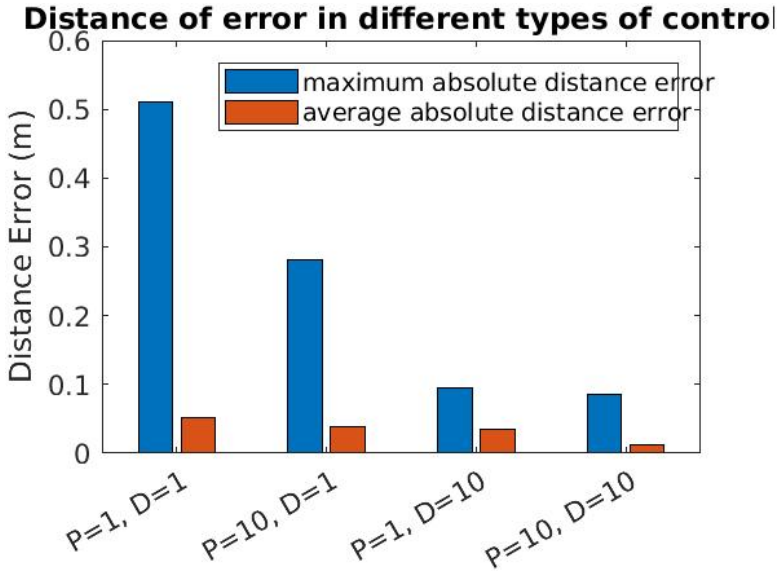
We used Kp and Kd

Methods

1. We used simulation in Matlab and Simulink because it's not safe to create self driving cars without first figuring out safe parameters and settings for control



Results



Conclusion

It is worthwhile to use proportional and derivative control because it improved our system. A balance of proportional and derivative control is the best for both comfort and safety when following a lead car.