

Project Writeup

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1. Effects of P, I and D components on steering angle

1.1. Model Architecture

The model pretty much follows the quiz and draws the neat code from the solution of the mpc-quizz. The equations are:-

- $x_{t+1} = x_t + v_t * \cos(\psi_t) * dt$
- $y_{t+1} = y_t + v_t * \sin(\psi_t) * dt$
- $\psi_{t+1} = \psi_t + \frac{v_t}{L_f} * \delta_t * dt$
- $v_{t+1} = v_t + a_t * dt$
- $cte_{t+1} = f(x_t - y_t + (v_t * \sin(e\psi_t) * dt$
- $e\psi_{t+1} = \psi_t - \psi_{des_t} + (\frac{v_t}{L_f} * \delta_t * dt)$

1.2. The Horizon

According to the Q&A for this project the corresponding values for N and dt were chosen. Tried increasing N , the simulation was slower as explained in the lesson.

1.3. Polynomial fitting to the waypoints

As discussed by everyone in the slack channel, the points were initially transformed to the vehicles perspective (x, y, ψ) are zero. No additional preprocessing.

1.4. Latency

A fellow student provided a great explanation for dealing with latency. Which is, apply the actuator values the previous time step. Worked magic.