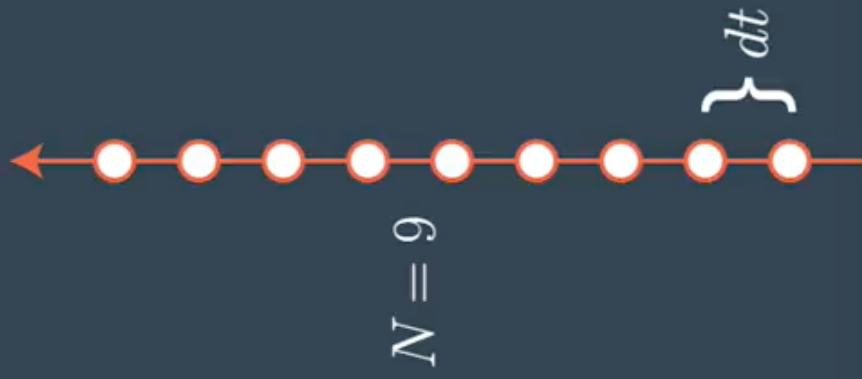


Model Predictive Control (Setup)

T Seconds



Model

$$x_{t+1} = x_t + v_t * \cos(\psi_t) * dt$$

$$y_{t+1} = y_t + v_t * \sin(\psi_t) * dt$$

$$\psi_{t+1} = \psi_t + \frac{v_t}{L_f} * \delta_t * dt$$

$$v_{t+1} = v_t + a_t * dt$$

$$cte_{t+1} = f(x_t) - y_t + v_t * \sin(e\psi_t) * dt$$

$$e\psi_{t+1} = \psi_t - \psi_{dest} + \frac{v_t}{L_f} * \delta_t * dt$$

Constraints

$$\delta \in [-25^\circ, 25^\circ]$$

$$a \in [-1, 1]$$

Cost

$$J = \sum_{t=1}^N (cte_t - cte_{ref})^2 + (e\psi_t - e\psi_{ref})^2 + \dots$$