

Delayed Response Time

$$\dot{v}(t) = a_{mic}(t - T_r)$$

Typical $T_r = 1s$.

Estimation Error

Gap s

$$s^{est} = s + e^{V_s \omega_s(t)}$$

Typical $V_s = 10\%$, $\omega_s(t)$ is determined by a Wiener process.

Speed of leading vehicle v_l

$$v_l^{est} = v_l - s \sigma_r \omega_l(t)$$

Typical σ_r on the order of $0.01s^{-1}$, $\omega_l(t)$ is determined by a Wiener process.

Discrete Wiener process

$$\omega_i = e^{-\Delta t / \tilde{\tau}} \omega_{i-1} + \sqrt{\frac{2\Delta t}{\tilde{\tau}}} * \eta_i$$

$$\eta_i \in \mathcal{N}(0, 1), \omega_0 = \eta_0$$