

$$\begin{bmatrix} \dot{x} \\ \dot{y} \\ \dot{\theta} \end{bmatrix}^+ = \begin{bmatrix} -x_{t-1} + v_t \cos \theta_{t-1} dt \\ -y_{t-1} + v_t \sin \theta_{t-1} dt \\ \theta_{t-1} + \frac{v_t \tan \theta}{L} dt \end{bmatrix}$$