UNIT VECTOR!

VECTOR - ROTATION DOT PRODUCT

$$e = v_1^T v_2 - \|v_2\| \sim \|v_2\|(\cos\alpha - 1)$$

$v_1^T v_2 \rightarrow \|v_2\| \cos\alpha$

$\|v_2\| \rightarrow \sqrt{v_2^T v_2}$

$$\dot{e} = \dot{v}_1^T v_2 + v_1^T \dot{v}_2 - \frac{v_2^T \dot{v}_2}{\|v_2\|}$$

$$\dot{e} = \left[v_2^T J_{v_1} + v_1^T J_{v_2} - \frac{v_2^T}{\|v_2\|} J_{v_2} \right] \dot{q}$$

J^T

$$J_\tau = \dot{v}_2^T J_{v_1} + v_2^T \dot{J}_{v_1} + \dot{v}_1^T J_{v_2} + v_1^T \dot{J}_{v_2} - \frac{\dot{v}_2^T}{\|v_2\|} J_{v_2} - \left(\frac{\dot{v}_2^T}{\|v_2\|} - \frac{v_2^T v_2 \dot{v}_2^T}{(v_2^T v_2)^{3/2}} \right) J_{v_2}$$