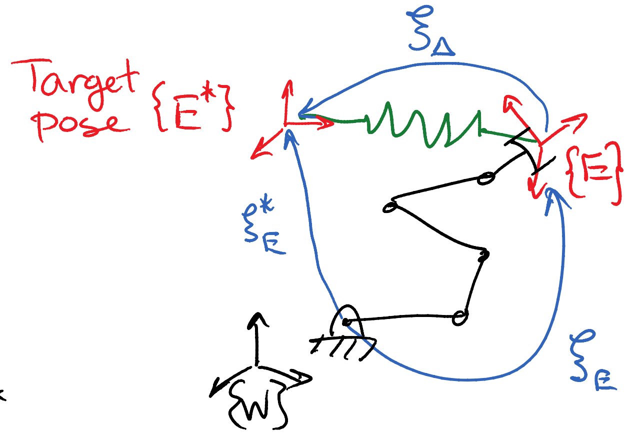
$$\xi_E \oplus \xi_\Delta = \xi_E^*$$

$$ {}^W T_E \, {}^E T_{E^*} = {}^W T_{E^*}$$

$$ {}^E T_{E^*} = \xi_\Delta = \left({}^W T_E\right)^{-1} \, {}^W T_{E^*}$$



Use an imaginary spring between {E} and {E*}.

$$ {}^E g_E = \gamma \; \underline{\mathrm{tr2delta}\left({}^W T_E, {}^W T_{E^*}\right)}$$

recall that this output $\delta_{(6\times 1)}$.

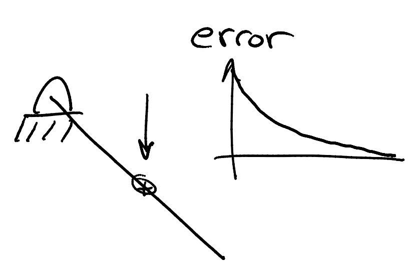
where γ is a diagonal matrix of spring stiffnesses.

Apply ${}^E g_E$ to end effector at {E}

$$Q = {}^E J_E^T(q) \, {}^E g_E$$

Text says ${}^N J$. Should be ${}^E J_E$

joint torques.



Assume imaginary damping in joints

$$\dot{q} = B^{-1} Q$$

diag damping coefficient matrix

$$q^{\langle k+1 \rangle} = q^{\langle k \rangle} + \alpha \, \dot{q}^{\langle k \rangle}$$

time interval

$$q^{\langle k+1 \rangle} = q^{\langle k \rangle} + \frac{\alpha \gamma}{B} \, {}^{E}J_{E}^{T}(q^{\langle k \rangle}) \, \underbrace{\Delta\left({}^{W}T_{E}^{-1} \, \mathcal{K}(q^{\langle k \rangle}) \right)}_{\text{tr2delta}}$$