Deep Learning Helicopter Dynamics Models

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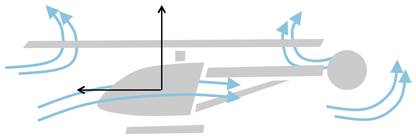
Helicopter System

Difficult because of latent unmeasured state like airflow



Kinematics:

$$\dot{s} = \begin{bmatrix} \dot{r} \\ \dot{q} \\ \dot{v} \\ \dot{\omega} \end{bmatrix} = F(s,u,\theta) = \begin{bmatrix} C_{12} v \\ \frac{1}{2} \hat{\omega} q \\ C_{12}^{\mathrm{T}} g - \omega \times v + f_v(s,u,\theta) \\ f_\omega(s,u,\theta) \end{bmatrix}$$

ReLU Network Model