



Control Tutorials for Matlab



Example: Pitch Controller--Variables

Here are the variables used in the pitch controller modeling equations

α = Angle of attack

q = Pitch rate

θ = Pitch angle

δe = Elevator deflection angle

$$\mu = \frac{\rho \cdot S \bar{c}}{4m}$$

ρ = Density of the surrounding air

S = Planform area of the wing

$\bar{c}$ = Average chord length

m = Mass of the aircraft

$$\Omega = \frac{2U}{\bar{c}}$$

U = Equilibrium flight speed

C_T = Coefficient of thrust

C_D = Coefficient of drag

C_L = Coefficient of lift

C_w = Coefficient of weight

C_M = Coefficient of pitch moment

γ_e = Flight path angle

$$\sigma = \frac{1}{1 + \mu C_{L\dot{\alpha}}} = \text{Constant sigma}$$

i_{yy} = Normalized moment of inertia

$$\eta = \mu \sigma C_k = \text{Constante nu}$$

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7/25/97 DK