Model Documentation of the 'AH-64 HELICOPTER at 130 knots Ph.'

1 Nomenclature

1.1 Nomenclature for Model Equations

x	state vector
u	control input vector
w	noise vector
z	regulated output vector
y	measurement vector

2 Model Equations

State Vector and Input Vector:

$$x \in \mathbb{R}^4 u \qquad \in \mathbb{R}^2 w \in \mathbb{R}^4 z \qquad \in \mathbb{R}^4 y \in \mathbb{R}^2$$

System Equations:

$$\dot{x}(t) = Ax(t) + B_1 w(t) + Bu(t) \tag{1a}$$
$$z(t) = C_1 x(t) + D_{11} w(t) + D12u(t) \tag{1b}$$
$$y(t) = Cx(t) + D21w(t) \tag{1c}$$

Outputs: z

2.1 Exemplary parameter values

Symbol	Value
A	$\begin{bmatrix} -0.0649 & 0.0787 & 0.1705 & -0.5616 \\ 0.0386 & -0.939 & 4.2277 & 0.0198 \\ 0.1121 & -0.4254 & -0.7968 & 0 \\ 0 & 0 & 1.0 & 0 \end{bmatrix}$
B	$\begin{bmatrix} -0.9454 & 0.5313 \\ -8.6476 & -10.769 \\ 19.0824 & -2.8959 \\ 0 & 0 \end{bmatrix}$
B_1	$\begin{bmatrix} -0.9454 & 0.5313 \\ -8.6476 & -10.769 \\ 19.0824 & -2.8959 \\ 0 & 0 \end{bmatrix}$
C_1	$\begin{bmatrix} 1.0 & 0 & 0 & 0 \\ 0 & 1.0 & 0 & 0 \\ 0 & 0 & 1.0 & 0 \\ 0 & 0 & 0 & 1.0 \end{bmatrix}$
C	$\begin{bmatrix} 1.0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 1.0 \end{bmatrix}$
D_{11}	$\begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$
D_{12}	$\begin{bmatrix} 0 & 0 \\ 0 & 0 \\ 1.0 & 0 \\ 0 & 1.0 \end{bmatrix}$
D_{21}	$\begin{bmatrix} 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix}$

3 Derivation and Explanation

This model is part of the "'COMPleib"' - library and wasautomatically imported into ACKREP.
The original description was:
HE2 AH-64 HELICOPTER at 130 knots Ph. M. Fitzsimons, "Reducing the computation required to solve a standard minimax problem", AUTO, Vol.31, pp.1885-1887, 1995

4 Simulation

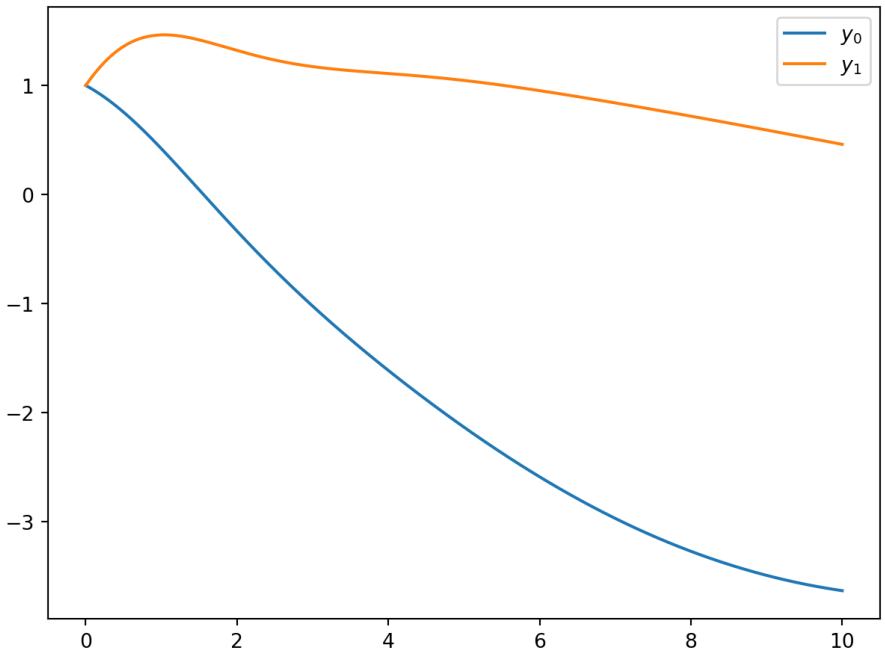

Figure 1: Simulation of the AH-64 HELICOPTER at 130 knots Ph..

References

[1] . Fitzsimons, "Reducing the computation required to solve a standard minimax problem", AUTO, Vol.31, pp.1885-1887, 1995