

$$\boxed{\hat{x} = T x} \rightarrow \dot{\hat{x}} = T \dot{x} = \hat{A} \hat{x} + \hat{B} u$$

kalikan T^{-1} :

$$A = T^{-1} \hat{A} T$$

$$T A = T T^{-1} \hat{A} T$$

$$T A = \hat{A} T$$

$$T A T^{-1} = \hat{A} T T^{-1}$$

$$\Rightarrow \boxed{\hat{A} = T A T^{-1}}$$

$$\left\{ \begin{aligned} T^{-1} T \dot{x} &= T^{-1} \hat{A} \hat{x} + T^{-1} \hat{B} u \\ \underbrace{T^{-1} T}_{I} \dot{x} &= T^{-1} \hat{A} \hat{x} + T^{-1} \hat{B} u \\ \dot{x} &= T^{-1} \hat{A} \hat{x} + T^{-1} \hat{B} u \\ &= \underbrace{T^{-1} \hat{A} T}_{A} x + \underbrace{T^{-1} \hat{B}}_{B} u \\ &= A x + B u \end{aligned} \right.$$

$$B = T^{-1} \hat{B}$$

$$T B = T T^{-1} \hat{B} \rightarrow \boxed{\hat{B} = T B}$$

$$y = \hat{C} \hat{x} + \hat{D} u = \hat{C} T x + \hat{D} u = C x + D u$$

$$C = \hat{C} T \rightarrow C T^{-1} = \hat{C} T T^{-1} \quad \boxed{\hat{D} = D}$$

$$\boxed{\hat{C} = C T^{-1}}$$