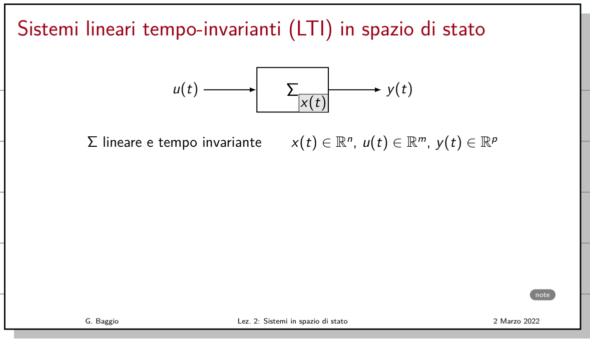

$$x(t) = \begin{bmatrix} x_1(t) \\ \vdots \\ x_n(t) \end{bmatrix} \in \mathbb{R}^n, \quad u(t) = \begin{bmatrix} u_1(t) \\ \vdots \\ u_m(t) \end{bmatrix} \in \mathbb{R}^m, \quad y(t) = \begin{bmatrix} y_1(t) \\ \vdots \\ y_p(t) \end{bmatrix} \in \mathbb{R}^p$$

Σ lineare tempo invariante:

$$\begin{cases} \dot{x}_1(t) = f_{11} x_1(t) + f_{12} x_2(t) + \dots + f_{1n} x_n(t) + g_{11} u_1(t) + \dots + g_{1m} u_m(t) \\ \vdots \\ \dot{x}_n(t) = f_{n1} x_1(t) + \dots + f_{nn} x_n(t) + g_{n1} u_1(t) + \dots + g_{nm} u_m(t) \\ y_1(t) = h_{11} x_1(t) + \dots + h_{1n} x_n(t) + j_{11} u_1(t) + \dots + j_{1m} u_m(t) \\ \vdots \\ y_p(t) = h_{p1} x_1(t) + \dots + h_{pn} x_n(t) + j_{p1} u_1(t) + \dots + j_{pm} u_m(t) \end{cases}$$

$$F = \begin{bmatrix} f_{11} & \cdots & f_{1n} \\ \vdots & \ddots & \vdots \\ f_{n1} & \cdots & f_{nn} \end{bmatrix} \in \mathbb{R}^{n \times n} = \text{matrice di stato}$$

$$G = \begin{bmatrix} g_{11} & \cdots & g_{1m} \\ \vdots & \ddots & \vdots \\ g_{n1} & \cdots & g_{nm} \end{bmatrix} \in \mathbb{R}^{n \times m} = \text{matrice degli ingressi}$$

$$H = \begin{bmatrix} h_{11} & \cdots & h_{1n} \\ \vdots & \ddots & \vdots \\ h_{p1} & \cdots & h_{pn} \end{bmatrix} \in \mathbb{R}^{p \times n} = \text{matrice delle uscite}$$

$$J = \begin{bmatrix} j_{11} & \cdots & j_{1m} \\ \vdots & \ddots & \vdots \\ j_{p1} & \cdots & j_{pm} \end{bmatrix} \in \mathbb{R}^{p \times m} = \text{matrice di feed-forward}$$

$$\begin{cases} \dot{x}(t) = Fx(t) + Gu(t) \\ y(t) = Hx(t) + Ju(t) \end{cases}$$