

$$\mathbf{A} \in \mathcal{R}^{m \times n}$$

$$\mathbf{A} = \begin{bmatrix} \mathbf{v}_1^r \\ \mathbf{v}_2^r \\ \mathbf{v}_3^r \\ \vdots \\ \mathbf{v}_m^r \end{bmatrix}$$

$m$  row vectors  $\mathbf{v}_i^r \in \mathcal{R}^n$

$$\mathbf{A} = \begin{bmatrix} \mathbf{v}_1^c & \mathbf{v}_2^c & \mathbf{v}_3^c & \cdots & \mathbf{v}_n^c \end{bmatrix}$$

$n$  column vectors  $\mathbf{v}_j^c \in \mathcal{R}^m$