

$$U_1 \times V_1$$

$$\begin{bmatrix} 1 & 0 & 2 \\ 1 & 0 & 2 \\ 1 & 0 & 2 \\ 1 & 0 & 2 \\ 1 & 0 & 2 \end{bmatrix}$$

$$U_2 \times V_2$$

$$\begin{bmatrix} 0 & 1 & 1 \\ 0 & 2 & 2 \\ 0 & 1 & 1 \\ 0 & 2 & 2 \\ 0 & 1 & 1 \end{bmatrix}$$

Axis

$U_1 \times U_2$  Concatenate  $V_2$

$$\begin{bmatrix} 1 & 1 \\ 1 & 2 \\ 1 & 1 \\ 1 & 2 \\ 1 & 1 \end{bmatrix}$$

$V_1 \times V_2$  Concatenate

$$\begin{bmatrix} 0 & 0 & 2 \\ 0 & 1 & 1 \end{bmatrix}$$

the Concatenate along columns

$$U_1 \times V_1 \quad U_2 \times V_2$$

For  $A = U_1 \times V_{1,1} + U_2 \times V_{2,2}$

$$\begin{aligned}
 &= 1 \times 1 + 1 \cdot 0 \\
 &= 1 + 0 \\
 &= 1
 \end{aligned}$$

they are the same result because when  $U_1$  concatenates with  $U_2$  its axis=1 which concatenates along columns

$$A = U \cdot V = U_{1,1} \times V_{1,1} + U_{2,1} \times V_{2,1}$$

$$= 1$$