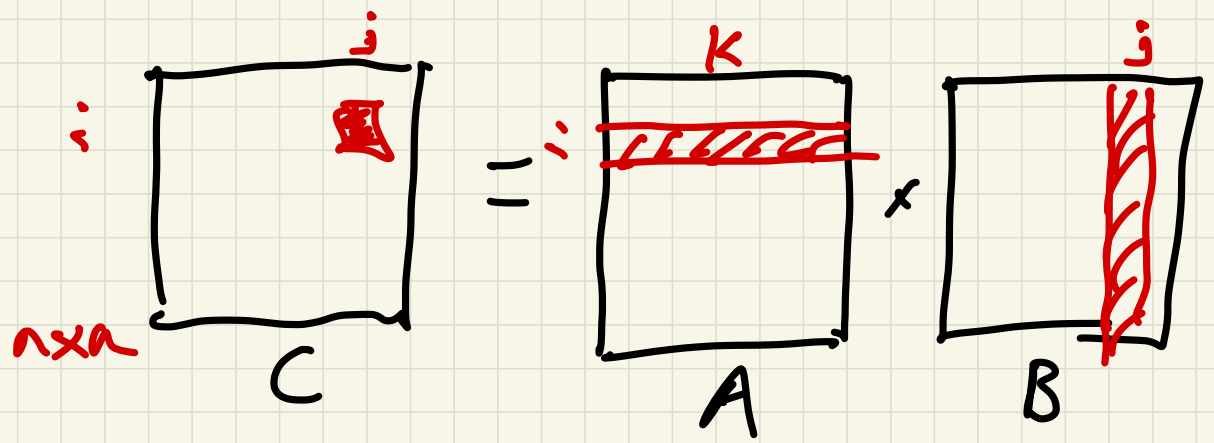
MATRICES IN NUMPY
&
SOME INTERESTING MATRICES

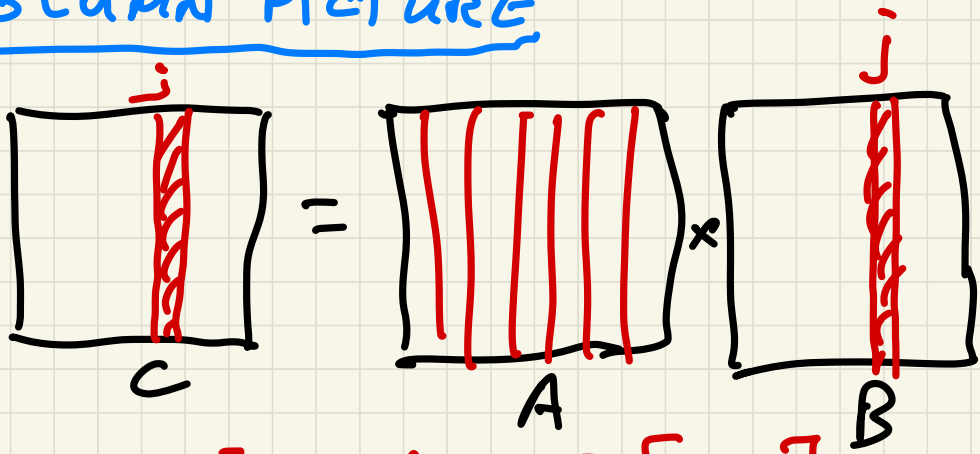
CS111 LECTURE 3

OCTOBER 8, 2020



DEFN: $c_{ij} = \sum_{k=0}^{n-1} a_{ik} b_{kj}$

COLUMN PICTURE



$C[:, j] = A @ B[:, j]$

A col. of C is a linear combination of the cols of A.

$$L \qquad\qquad y = b$$

$$\begin{bmatrix} 1 & & & \\ 1 & 1 & & \\ 2 & 0 & 1 & \\ -1 & 2 & 1 & 1 \end{bmatrix} \begin{bmatrix} \\ \\ \\ \\ \end{bmatrix} = \begin{bmatrix} 2 \\ 3 \\ 3 \\ 1 \end{bmatrix}$$

$$b = \begin{bmatrix} 2 \\ 3 \\ 3 \\ 1 \end{bmatrix} \rightarrow \begin{bmatrix} 2 \\ 1 \\ -1 \\ 3 \end{bmatrix} \rightarrow \begin{bmatrix} 2 \\ 1 \\ -1 \\ 1 \end{bmatrix} \rightarrow \begin{bmatrix} 2 \\ 1 \\ -1 \\ 2 \end{bmatrix} = y$$