

WON'T TEST YOU ON (BECAUSE I DON'T USE OR USE INFREQUENTLY)

- Chap 2 - RESHAPE & EMPTY VECTORS (45-48)

LOGICAL VECTORS (59-61)

MESHGRID (65-66) → BUT diff() YES

MAKE SURE YOU KNOW

ARRAY OPERATIONS $*$ $.$ $.$ \wedge

NR. MATRIX OPS - USUALLY $*$

ARRAY OPERATIONS - "DOT" OPS.

- ELEMENT-BY-ELEMENT

- ARRAYS MUST BE SAME SIZE
SAME # ROWS & COLS

SCALAR

e.g. HAVE CONC OF A & B DATA & K VALUE

CALC $Y = k C_A C_B^2$ @ EACH TIME

$$C_A = \begin{bmatrix} \# & \leftarrow \text{time 1} \\ \# & \leftarrow \text{time 2} \\ \# & \\ \vdots & \end{bmatrix}$$

$$C_B = \begin{bmatrix} \# \\ \# \\ \vdots \end{bmatrix}$$

$$\gg Y = k * C_A * C_B . \wedge 2$$

INSTEAD WANT

$$Y = k C_A C_B^{1/2}$$

$$Y = k * C_A * C_B . \wedge (1/2)$$

OR $C_B . \wedge 0.5$
 $\approx \text{sqrt}(C_B)$

COMPARE MATRIX OPERATIONS, USUALLY * \rightarrow # COLS IN 1st MATRIX MUST EQUAL # ROWS IN 2nd MATRIX

CONSIDER 2 COUPLED ALGEBRA EQNS

$$\begin{aligned} x + 2y &= 5 \\ 3x + 4y &= 6 \end{aligned}$$

IN MATRIX NOTATION

$$\begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} 5 \\ 6 \end{bmatrix}$$

$$A * u = b$$

MATLAB MATRIX MULT. (NO "DOT")

IN COMMAND WINDOW

$$\gg b = A * u$$

$$\Rightarrow \begin{aligned} 1 * x + 2 * y &= 5 \\ 3 * x + 4 * y &= 6 \end{aligned}$$

$$\Rightarrow \begin{aligned} A(1,1) * u(1) + A(1,2) * u(2) &= b(1) \\ A(2,1) * u(1) + A(2,2) * u(2) &= b(2) \end{aligned}$$

GOAL:
FIND x & y
VALUES

CAN SOLVE THIS WAY

$$A * u = b$$

USE INVERSE OF SQUARE MATRIX

$$A^{-1} * A = I \leftarrow \text{IDENTITY MATRIX}$$

$$\text{MULT BOTH SIDES FROM LEFT BY } A^{-1} \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

$$A^{-1} A u = A^{-1} b$$

$$I u$$

$$u = A^{-1} b$$

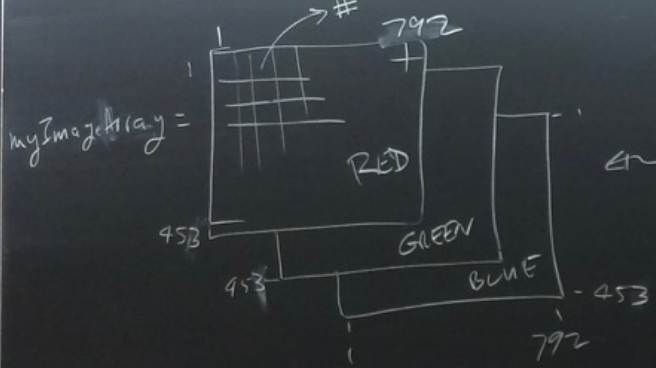
MATRIX MULT.

IN MATLAB

$$\gg u = \text{inv}(A) * b$$

IMAGE IS A 3D ARRAY → "PAGES" OF 2D ARRAYS (MATRICES)
OF SAME SIZE

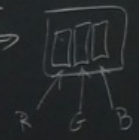
EACH ELEMENT HAS A #



← RGB INFO

→ EVERY "PIXEL" OR SPOT IN IMAGE

VERY SMALL
SPOTS
ON
COMPUTER
DISPLAY



→ CHECK OUT PETCO PARK SCREEN!

Size(myImageUray) ⇒ [453, 792, 3]

