Determinant

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Determinant

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Determinant of A

$$|A| = ?$$

Determinant

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Determinant of A

$$|A| = ?$$

$$|A| = 8\begin{bmatrix} -3 & -2 \\ -4 & 1 \end{bmatrix} - (-8)\begin{bmatrix} 4 & -2 \\ 3 & 1 \end{bmatrix} + (-2)\begin{bmatrix} 4 & -3 \\ 3 & -4 \end{bmatrix}$$

YOUTUBE/Digitaldaru INSTAGRAM/Digitaldaru

Determinant

$$A = \begin{bmatrix} \square & -8 & \square \\ 4 & \blacksquare & -2 \\ 3 & & 1 \end{bmatrix}$$

Determinant of A

$$|A| = ?$$

$$|A| = 8\begin{bmatrix} -3 & -2 \\ -4 & 1 \end{bmatrix} - (-8)\begin{bmatrix} 4 & -2 \\ 3 & 1 \end{bmatrix} + (-2)\begin{bmatrix} 4 & -3 \\ 3 & -4 \end{bmatrix}$$

DIGITAL

Determinant

$$A = \begin{bmatrix} & & -2 \\ 4 & -3 & \\ 3 & -4 & \end{bmatrix}$$

Determinant of A

$$|A| = ?$$

$$|A| = 8\begin{bmatrix} -3 & -2 \\ -4 & 1 \end{bmatrix} - (-8)\begin{bmatrix} 4 & -2 \\ 3 & 1 \end{bmatrix} + (-2)\begin{bmatrix} 4 & -3 \\ 3 & -4 \end{bmatrix}$$

$$|A| = 8(-3-8) + 8(4+6) - 2(-16+9)$$

DIGITAL

Determinant

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Determinant of A

$$|A| = 6$$

$$|A| = 8\begin{bmatrix} -3 & -2 \\ -4 & 1 \end{bmatrix} - (-8)\begin{bmatrix} 4 & -2 \\ 3 & 1 \end{bmatrix} + (-2)\begin{bmatrix} 4 & -3 \\ 3 & -4 \end{bmatrix}$$

$$|A| = 8(-3-8) + 8(4+6) - 2(-16+9)$$

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Eigen Value

$$A = \begin{bmatrix} -3 & -2 \\ -4 & 1 \end{bmatrix}$$

Eigen Value

-11

$$\lambda^3 - [Sum\ of\ Diagonal\ Elements]\lambda^2 + [Sum\ of\ Diagonal\ Minors]\lambda - |A| = 0$$

Eigen Value

$$A = \begin{bmatrix} 8 & -8 & \\ 4 & -3 & \\ & & \end{bmatrix}$$

Eigen Value

-11+14+8=11

$$\lambda^3 - [Sum\ of\ Diagonal\ Elements]\lambda^2 + [Sum\ of\ Diagonal\ Minors]\lambda - |A| = 0$$

Eigen Value

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Eigen Value

$$\lambda^3 - [Sum\ of\ Diagonal\ Elements]\lambda^2 + [Sum\ of\ Diagonal\ Minors]\lambda - |A| = 0$$

$$\lambda^3 - 6\lambda^2 + 11\lambda - 6 = 0$$

Eigen Value

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Eigen Value

$$\lambda = 1, 2, 3$$

$$\lambda^3 - [Sum\ of\ Diagonal\ Elements]\lambda^2 + [Sum\ of\ Diagonal\ Minors]\lambda - |A| = 0$$

$$\lambda^3 - 6\lambda^2 + 11\lambda - 6 = 0$$

Eigen Vectors

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

$$(A - \lambda * I)X = 0$$

Eigen Vectors

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Given Matrix — Identity

$$A - \lambda * I X = 0$$

Constant — Unknown Matrix

Dimensionality Reduction in Machine learning in Hindi || Principal ...

Eigen Vectors

$$A = \begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix}$$

Given Matrix — Identity

$$A - \lambda * I X = 0$$

Constant — Unknown Matrix

$$\left(\begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix} - \lambda \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix} \right) \begin{bmatrix} x1 \\ x2 \\ x3 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

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Eigen Vectors

$$\left(\begin{bmatrix} 8 & -8 & -2 \\ 4 & -3 & -2 \\ 3 & -4 & 1 \end{bmatrix} - \lambda \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}\right) = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

$$\begin{bmatrix} 8-\lambda & -8 & -2 \\ 4 & -3-\lambda & -2 \\ 3 & -4 & 1-\lambda \end{bmatrix} = 0$$

Eigen Vectors

$\lambda = 1$

$$\begin{bmatrix} 8-\lambda & -8 & -2 \\ 4 & -3-\lambda & -2 \\ 3 & -4 & 1-\lambda \end{bmatrix} = 0$$

$$\begin{bmatrix} 7 & -8 & -2 \\ 4 & -4 & -2 \\ 3 & -4 & 0 \end{bmatrix} * \begin{bmatrix} x1 \\ x2 \\ x3 \end{bmatrix} = \begin{bmatrix} 0 \\ 0 \\ 0 \end{bmatrix}$$

Crammer's Rule

7(x1) – 8(x2) – 2(x3) = 0

4(x1) – 4(x2) – 2(x3) = 0

Eigen Vectors

$\lambda = 1$

$$7(x1) - 8(x2) - 2(x3) = 0$$
$$4(x1) - 4(x2) - 2(x3) = 0$$

$$\frac{x1}{\begin{vmatrix} -8 & -2 \\ -4 & -2 \end{vmatrix}} = \frac{x2}{\begin{vmatrix} 7 & -2 \\ -4 & -2 \end{vmatrix}} = \frac{x3}{\begin{vmatrix} 7 & -8 \\ 4 & -4 \end{vmatrix}}$$

Eigen Vectors

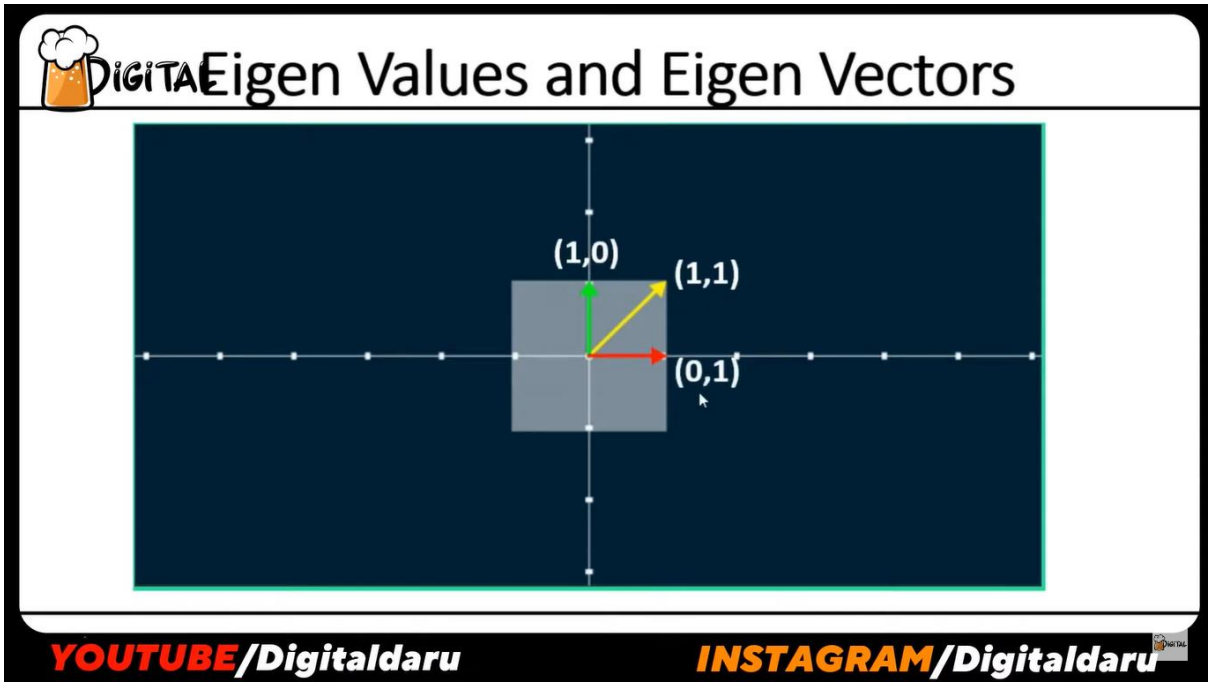
$\lambda = 1$

$7(x1) - 8(x2) - 2(x3) = 0$
$4(x1) - 4(x2) - 2(x3) = 0$

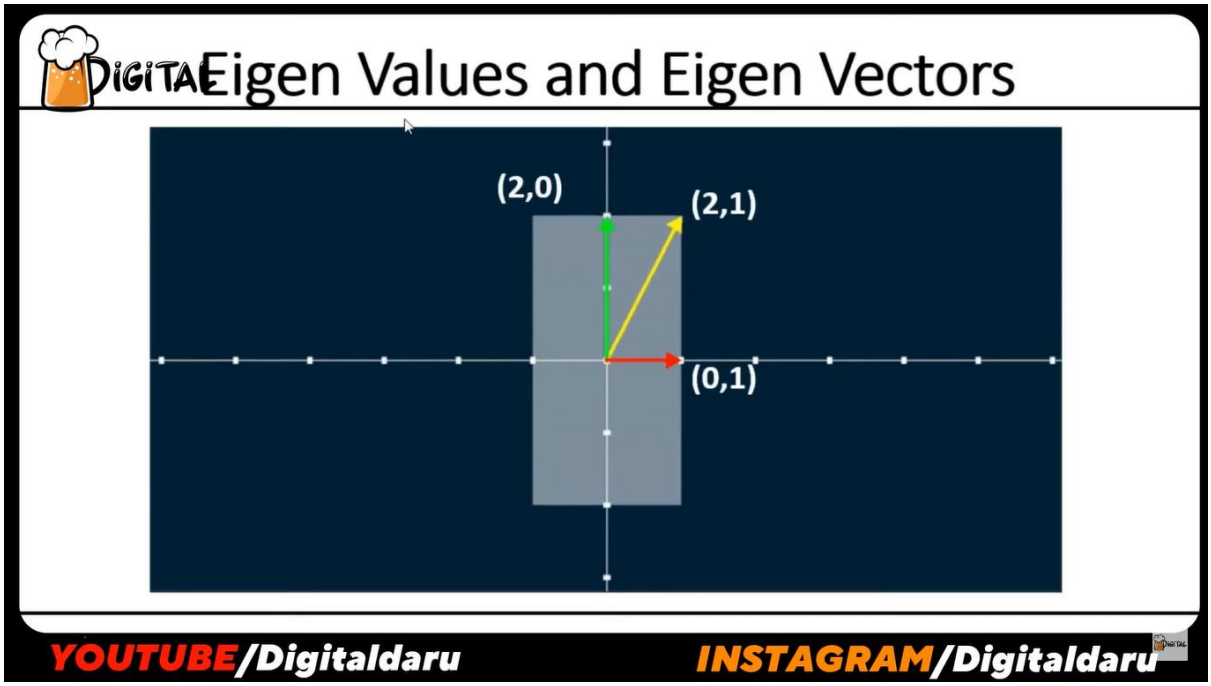
$$\frac{x1}{\begin{vmatrix} -8 & -2 \\ -4 & -2 \end{vmatrix}} = \frac{x2}{\begin{vmatrix} 7 & -2 \\ -4 & -2 \end{vmatrix}} = \frac{x3}{\begin{vmatrix} 7 & -8 \\ 4 & -4 \end{vmatrix}}$$

$$\frac{x1}{8} = \frac{x2}{6} = \frac{x3}{4}$$

$$Eigen\ Vector = \begin{bmatrix} 8 \\ 6 \\ 4 \end{bmatrix}$$



- **Vectors ➔ (1,0)(1,1)**



- **Eigen Value Increase From 1 TO 2**