

AGENDA – DAY 8 – 07-DEC-2025 (SUN)

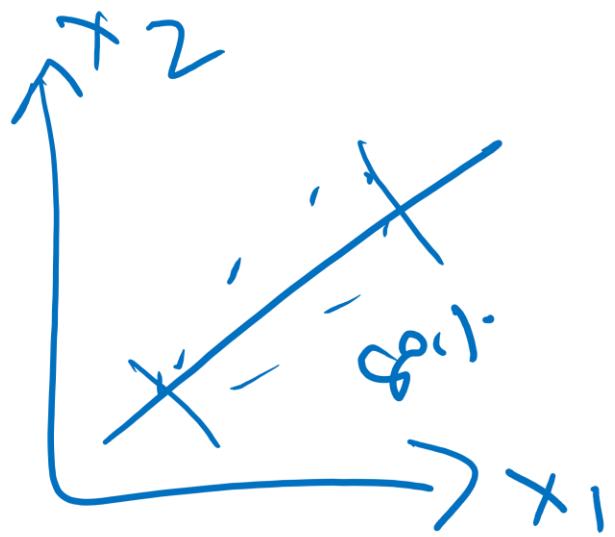
- REACP – DAY 7 – MAX 10 MINUTES
- DAY 8 – UNSUPERVISED LEARNING
 - Dimensionality Reduction Techniques
 - Importance of Dimensionality Reduction
 - Principal Component Analysis (PCA)
 - Linear Discriminant Analysis (LDA)
 - t-Distributed Stochastic Neighbour Embedding (t-SNE)
 - Association Rule Learning
 - Introduction to Association Rule Learning
 - Apriori Algorithm
 - Eclat Algorithm
 - Anomaly Detection Techniques
 - Isolation forest
 - Model Evaluation in Unsupervised Learning:
 - Silhouette Score for Clustering
- Ensemble Learning
- Q & A
- SUMMARY, HEADS-UP FOR DAY 9 & CLOSURE

REACP – DAY 7 – MAX 10 MINUTES

- Subjective Segmentation
- K-Means Clustering
- Hierarchical Clustering
- DBSCAN
- Agglomerative -bottom up
- Divisive
- Centroids
- elbow method – Deciding on the number of clusters
- silhouette score – Stability (compact) of the cluster

LINEAR TRANSFORMATION:

$\vec{v} = \lambda \vec{v}$ → CONSTANT
MATRIX → VECTOR
EIGEN VECTOR
EIGEN VALUE

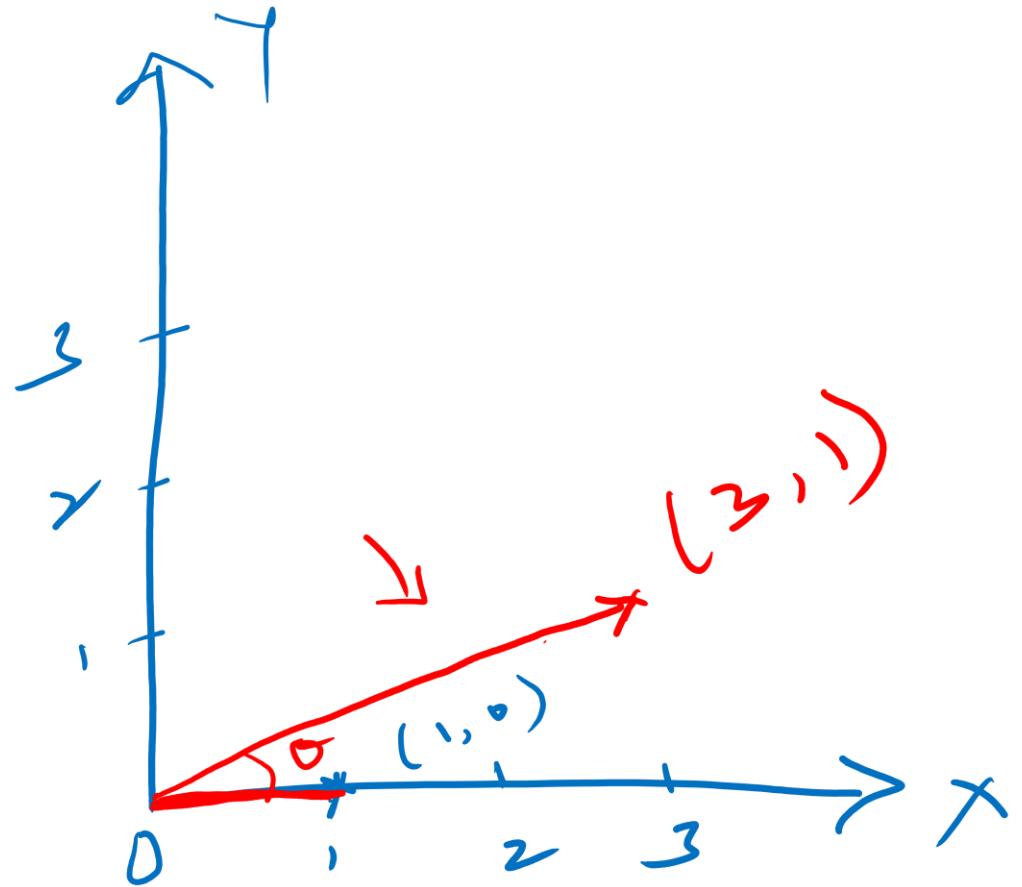


$$\begin{bmatrix} 3 & 0 \\ 0 & 1 \end{bmatrix} \begin{bmatrix} 1 \\ 2 \end{bmatrix} = \begin{bmatrix} 3 \\ 2 \end{bmatrix}$$

EIGENVALUE

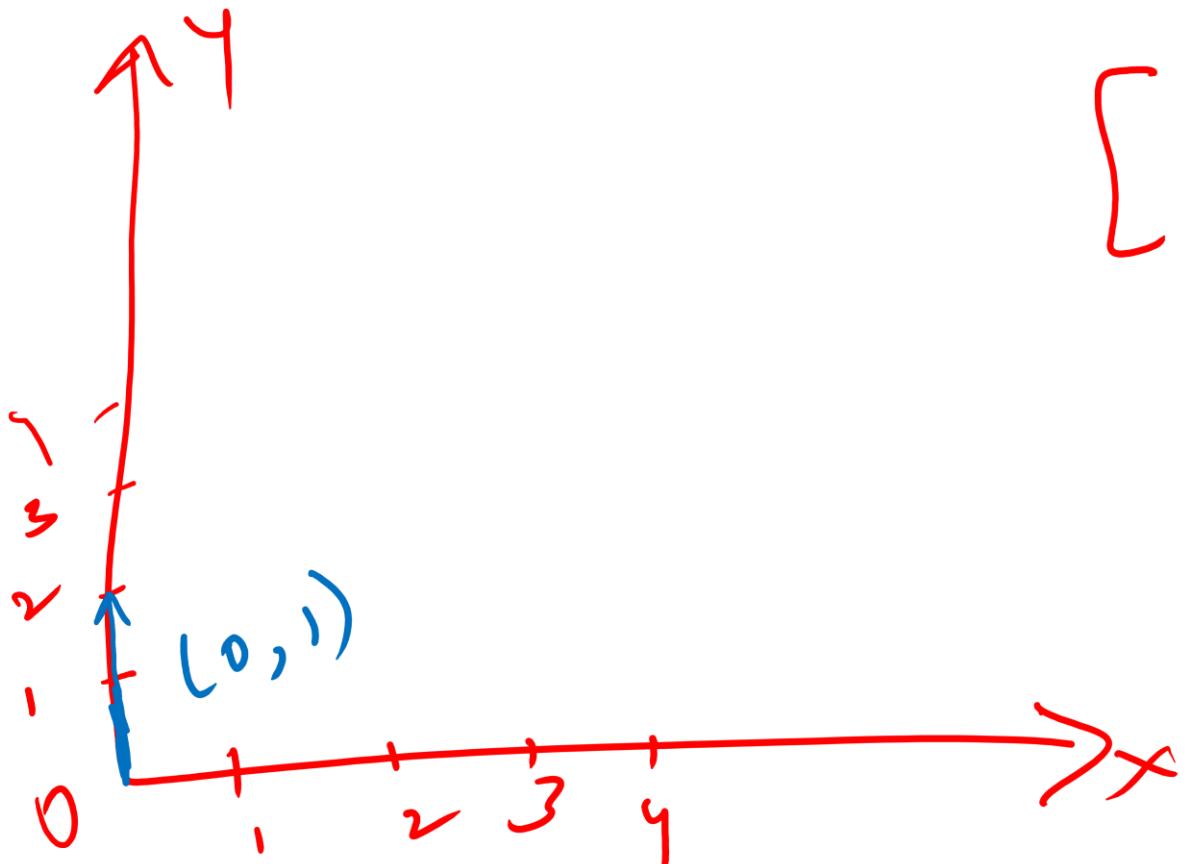
$$= 3 \begin{bmatrix} 1 \\ -1 \end{bmatrix}$$

EIGENVECTOR



STRETCHED & REFLECTED

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

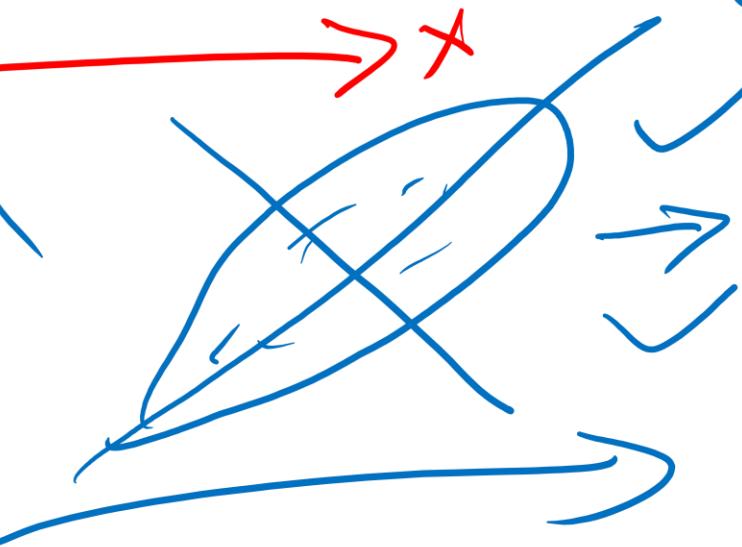
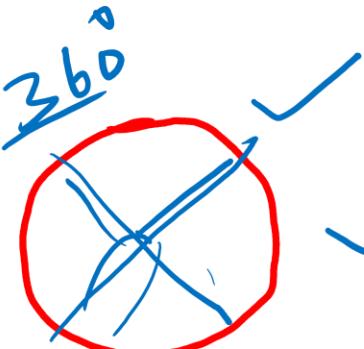


$$\begin{bmatrix} 3 & 0 \\ 1 & 2 \end{bmatrix} \begin{bmatrix} 0 \\ 1 \end{bmatrix} = \begin{bmatrix} 0 \\ 2 \end{bmatrix}$$

Σ STRETCHED
NOT ROTATED.

SHAPE PLS
TENS.

+ 2



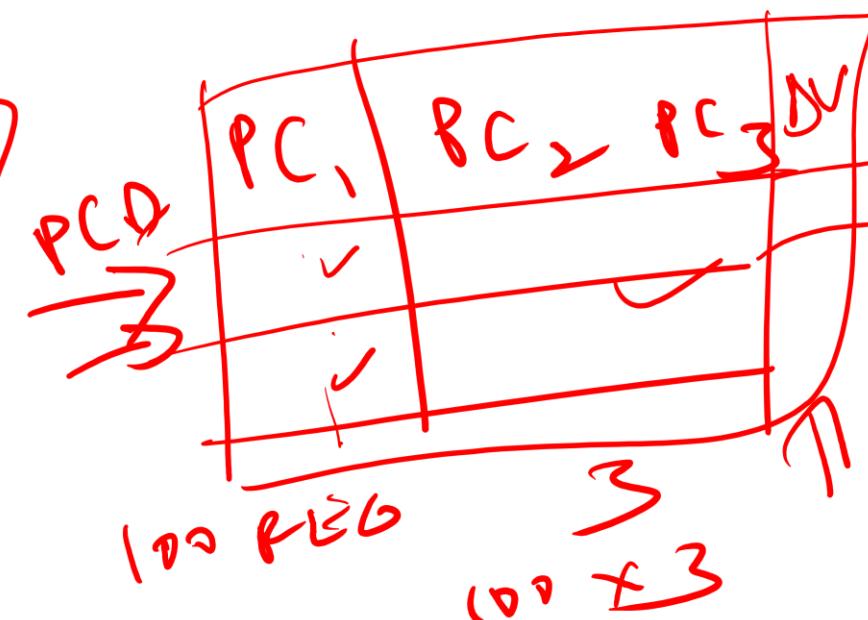
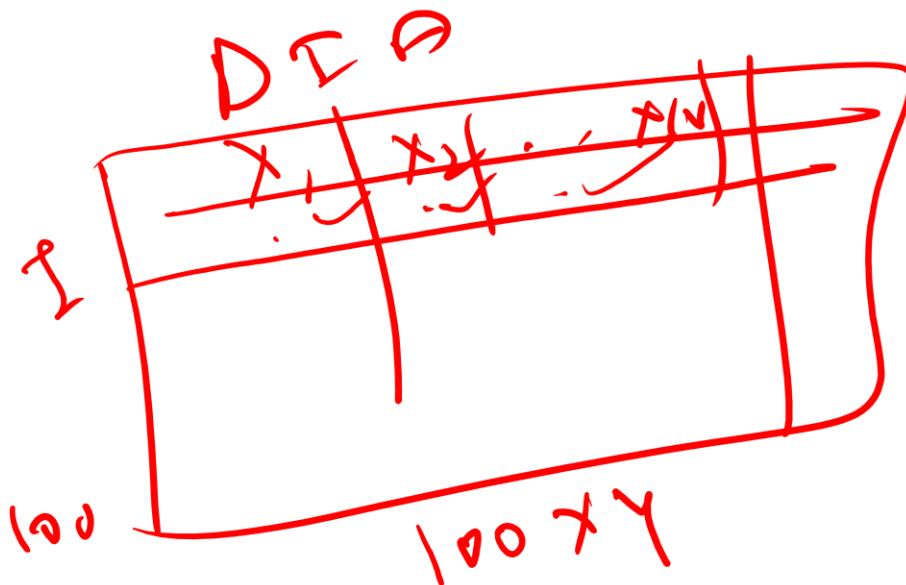
CIRCULAR
SPHERICAL.
→ D R
+ PCA POSSIBLE?
PCA PERIOD

NOT SPHER
YES
OF DR
PCA

PCA POSSIBLE
1 DR

$$PC_1 = \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4$$

$$PC_4 = \alpha_1 x_1 + \alpha_2 x_2 + \alpha_3 x_3 + \alpha_4 x_4$$



8
28 + 28 - 781
GREET SCALE
IMAGE

