* Introduction to PCA & Dimensonality Reduction
* Core concepts: variance, principal components & scaling
* PCA training and transformation
* Implmentation of PCA on a dataset
* Visualizing Data, Feature Reduction & practical applications

Why PCA is Needed

Feature 1: Study hours
Feature 2: Exam score

F1: Height in cm
F2: " " inch

What PCA Does:

→ No label are used
→ PCA only looks at relationship inside the data

"PCA does not select features, it creates new features"

PCA:
→ Rotates the coordinate system
→ Finds new axes called principal components (PC)
→ Orders these axes by importance (variance)

→ Finds new axes called [illegible]

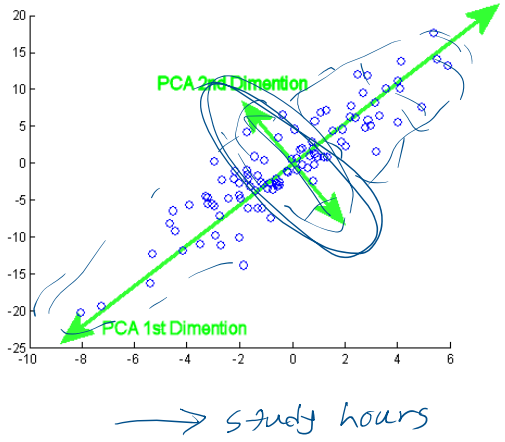
→ Orders these axes by importance (variance)

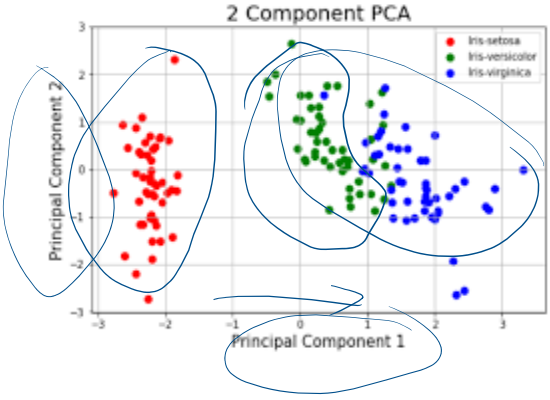
* PCA creates new mathematical features

What is PCA?

Eigenvector = Direction →

Eigen value = Importance or power





Core Concept: Variance & Scaling Considerations

2, 2, 2, 2, 2
↓
Low variance

1, 3, 6, 9, 11
↓
High variance

Why do we need scaling?

F1: Height

150, 160, 180 →

F2: weight

50, 75, 45