

PCA(Principal Component Analysis)

↓
Dimensionality Reduction

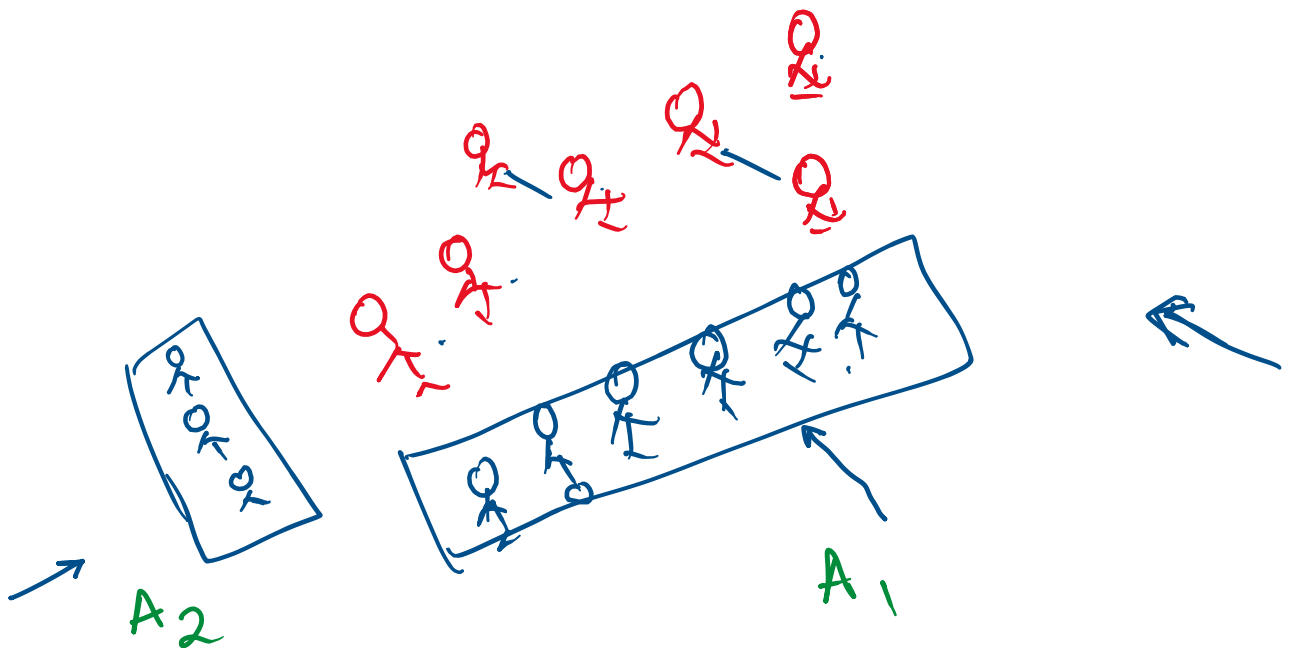
↓
Dimensions

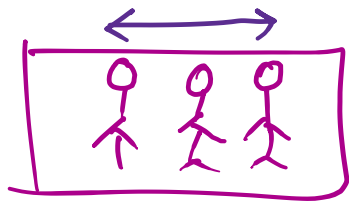
↓
Reducing, making smaller.

100 features

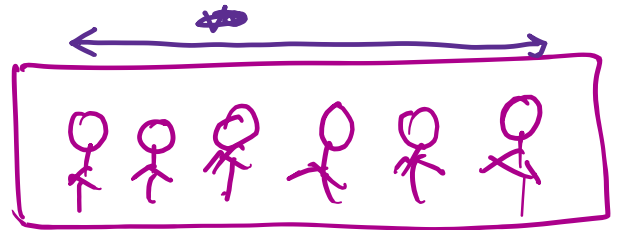
5, 6, 7 features

Example :-





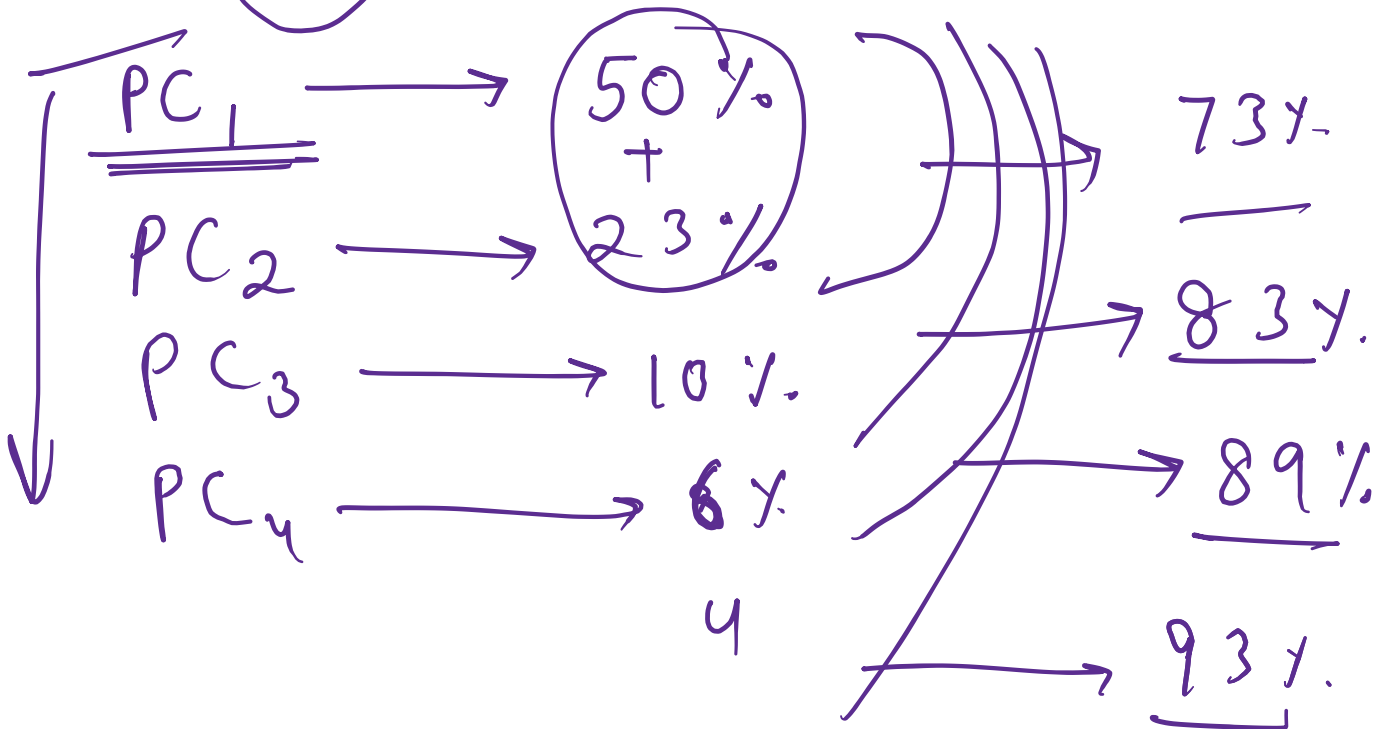
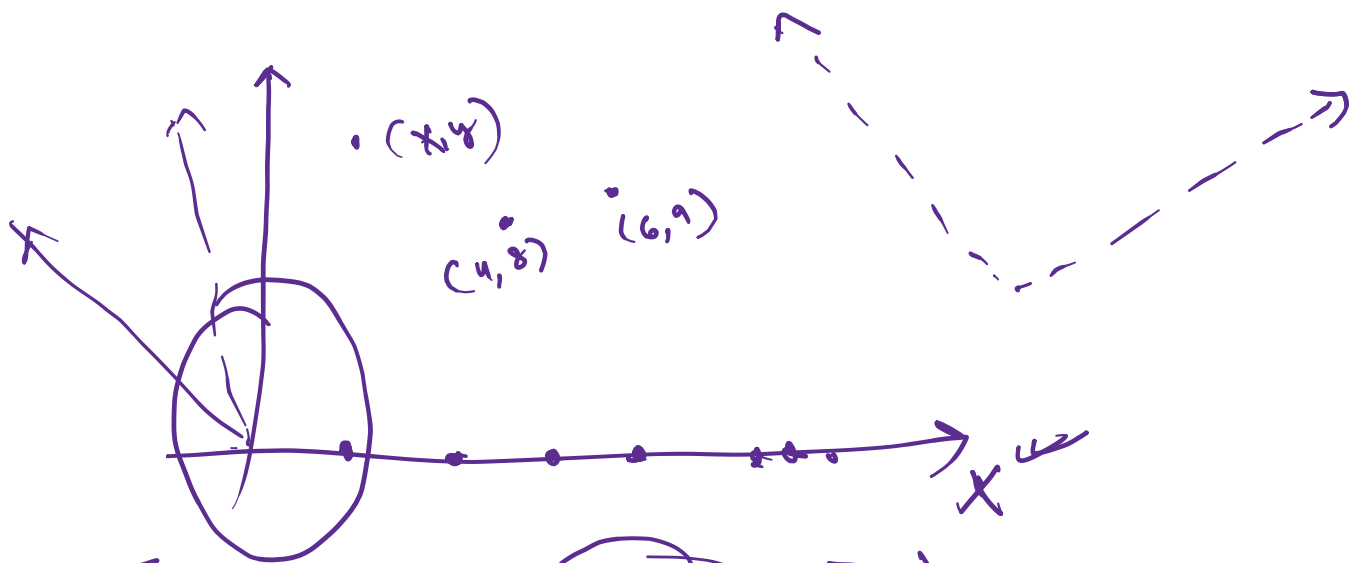
A-2



A-1

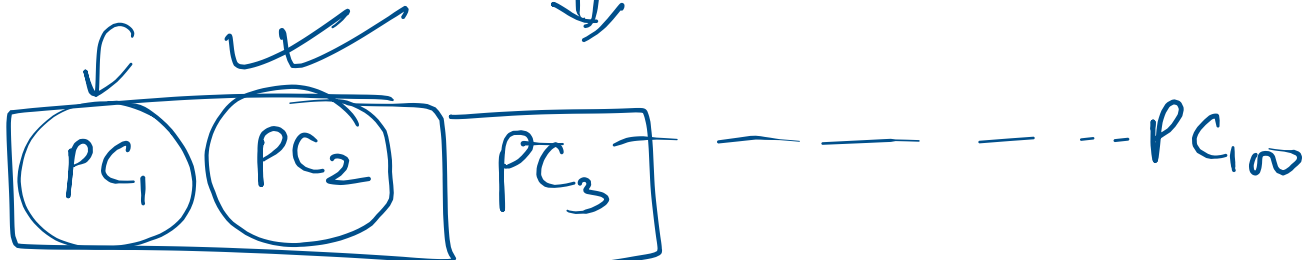
variability ↓

variability ↑



$x_1, x_2, x_3, \dots, x_{100}$

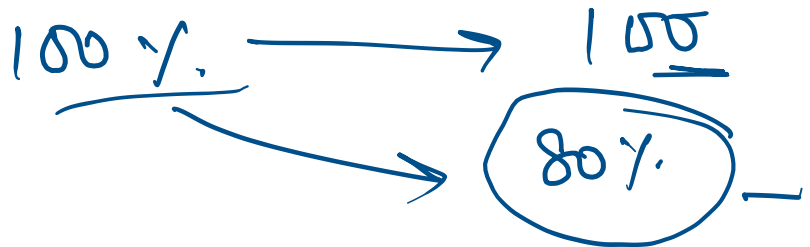
\Downarrow



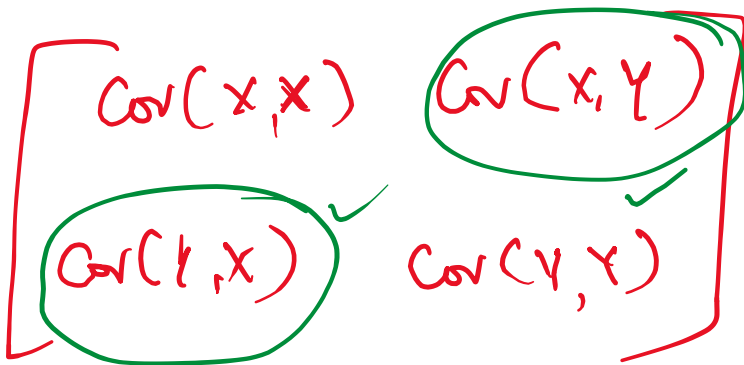
73% | 53% 20% 10% 6

83%

89



Covariance matrix.



$$2(x_i + y_j)$$

$$8(x_i + y_j)$$

steps-

① Import data

② standardize & Cov. matrix.

③ Eigen value & Eigen vector.

↓
dimⁿ of max^m
variability,

④ define PC $\xrightarrow{\quad}$ dot product
 \searrow
 or
 Eigen vector &
 standard Column.

Ref:-
dot product = $|A| |B| \cos \theta$
 $\vec{A} \cdot \vec{B}$

$\theta \rightarrow 0^\circ$
 $\theta \rightarrow 1$

$$\text{dot product} = |\vec{A}| |\vec{B}| \cos \theta$$

Hand-drawn diagram showing a circle labeled '1' on a horizontal line. Above the circle is '0°'. To the left, two arrows point towards the circle and the '0°' label respectively.

0.07 0.10 0.20 - - - 100%

\rightarrow PC_1 \rightarrow max^m variable
 \rightarrow PC_2 \rightarrow 2nd max.
 \rightarrow PC_3 \rightarrow 3rd max
 \vdots

[illegible]