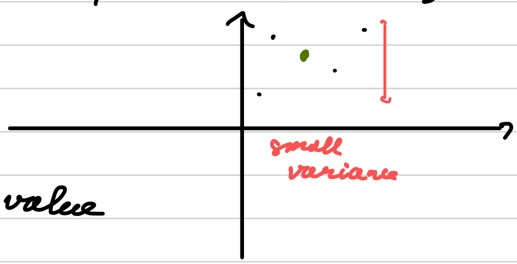
X Y → r.v s

→ $E[X]$: mean

↳ tells us mean value

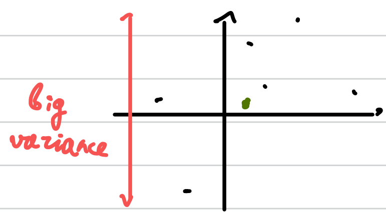


→ $Var(X)$ = variance

↳ how averagely far our data from mean

{ 4 5 4 6 } small variance

{ 1, 17, 6, 72, 98 } big variance



→ SD $\sigma(X) = \sqrt{Var(X)}$

Variance is squared. But to calculate real distance we need to take square root. (remember vectors :)

→ $Cov(X,Y)$ covariance

relationship between 2 r.v s.

X and Y independent ⇒ $Cov(X,Y) = 0$ (0 relationships)

X ↑ big ↑ Y big $Cov(X,Y)$ positive

X ↑ big ↑ Y small $Cov(X,Y)$ negative

→ Covariance coefficient (correlation) helps to measure how are they related and affect each other.

Joint: $P(X = x \land Y = y)$

Marginal: $P(X = x) = \sum P(X = x \mid Y = y)\, P(Y = y)$