

Saturday, January 30, 2021 11:35 PM

With trees (RStudio)

(Discrete)

Expectation:

Variance:

(Discrete)

Expectation

Variance,

← Do it in R/English

Assume $X \sim N(u, \sigma^2)$ ← this means X comes from normal distribution with mean u and variance σ^2

$$x_{t+1} \sim N(u_{t+1}, \sigma^2)$$
$$2X \sim N(2\mu, 4\sigma^2)$$

Special example: "convolution": we illustrate use matrices of

random variable):

average —
standard deviation

- ✓ con toe
- ✓ bell-shaped curve

Transformation of Random Variable :

~~X~~ SH, T3. \leftarrow 90.17 \leftarrow average 0.5

2x: $\{0.23\} \leftarrow (1)$

Trage 57 X.

$$Y_i = \{0, 2\}$$

1. 2. 3.
0 2 0,

Ques $\neq 0.5$

$$= 1$$

Species: "Convolution" element-wise multiplication

 3×3


2x2

$$\begin{pmatrix} 1 & 0 \\ 0 & 0 \end{pmatrix}$$

3	5
9	11

Applications

X

f_i 

$$f_2: \begin{array}{|c|} \hline 0 \\ \hline \end{array}$$

1
(
.
.

152 f

41

eyes

A hand-drawn diagram of a right-angled triangle. The triangle is oriented with its right angle at the bottom-left vertex, indicated by a small square symbol. The hypotenuse is the longest side, connecting the top-left and bottom-right vertices. The other two sides are the base (bottom) and the height (left side).

no sf

lips

algorithm (NW)

$$\begin{pmatrix} 1 & 2 \\ 4 & 5 \end{pmatrix} \cdot \begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix} \neq \begin{pmatrix} 1 & 1 \\ 4 & 5 \end{pmatrix} \quad 1 \times 1 + 2 \times 1 + 4 \times 0 + 5 \times 0 = 1 + 2 + 0 + 0 = 3$$

↑
Linn. operacii

$$\begin{pmatrix} 2 & 3 \\ 5 & 6 \end{pmatrix} \cdot \begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix} = 2 \times 1 + 3 \times 1 + 0 + 0 = 5$$

$$\begin{pmatrix} 1 & 2 & 3 \\ 4 & 5 & 6 \\ 7 & 8 & 9 \end{pmatrix} \xrightarrow{\text{filter: } \begin{pmatrix} 1 & 1 \\ 0 & 0 \end{pmatrix}} \begin{pmatrix} 3 & 5 \\ 9 & 11 \end{pmatrix}$$

Convolution

: Special type of Transform
of Vector Variable