

Random processes

Properties of random processes

- Expected value of signal at time t :

$$\mu_X(t) = E[X(t)]$$

- Autocorrelation of signal at times t_1 and t_2 :

$$R_{XX}(t_1, t_2) = E[X(t_1)X(t_2)]$$

- Autocovariance of signal at times t_1 and t_2 :

$$C_{XX}(t_1, t_2) = E[\tilde{X}(t_1)\tilde{X}(t_2)] = R_{XX}(t_1, t_2) - \mu_X(t_1)\mu_X(t_2)$$

where $\tilde{X}(t) = X(t) - \mu_X(t)$

Properties of two random processes

- Cross-correlation of $X(t_1)$ and $Y(t_2)$:

$$R_{XY}(t_1, t_2) = E[X(t_1)Y(t_2)]$$

- Cross-covariance of $X(t_1)$ and $Y(t_2)$:

$$C_{XY}(t_1, t_2) = E[\tilde{X}(t_1)\tilde{Y}(t_2)]$$

From:

<https://www.jaeyoung.wiki/> - Jaeyoung Wiki

Permanent link:

https://www.jaeyoung.wiki/kb:random_processes

Last update: **2024-04-30 04:03**