Exponential ①

This is a dist^n of time to an event when the prob of the event occuring in the next small time interval does not vary tough time. It is also the dist^n of time b/w events when the num of events in any time interval has a poission dist^n. A continous r.v x is said to have an exponential dist^n if its pdf can be write in the following form.

$$f(x;\lambda) = \lambda e^{-\lambda x} \quad \text{where } x, \lambda > 0$$

OR

$$0 < x < \infty$$

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$$f\left(x; \frac{1}{\lambda}\right) = \frac{1}{\lambda} e^{-\frac{x}{\lambda}}$$

$\Rightarrow \lambda$ Scale parameter.

Applications of Exponential Dist^{n}.

(1) It is widely the used to describe phenomena ~~not~~ involving events that occur randomly in space or time at a const rate

(2) We use it in time to failure.

(3) It is used in live testing experiment

(4) It is used in quality control for dist^{n} of CUSUM chart.