Reliability Stat

1

$F(t)$ = CDF = COMULATIVE DISTRIBUTION FUNCTION

$f(t)$ = PDF = PROBABILITY DENSITY FUNCTION

$h(t)$ = HAZARD RATE

$E(T) = M$ = EXPECTED VALUE

$R(t)$ = RELIABILITY = SURVIVAL FUNCTION

$= 1 - \underset{\text{CDF}}{F(t)} = 1 - \int PDF$

$$h(t) = \frac{f(t)}{R(t)} = \frac{PDF}{1 - CDF} = \frac{PDF}{1 - \int PDF}$$

THE DRIVATIVE OF CDF is PDF

* $PDF = CDF'$
* $CDF = \int PDF$

HMI

USER LOSTNESS

$$L = \left[\left(\frac{N}{S-1} \right)^2 + \left(\frac{R}{N-1} \right)^2 \right]^{1/2}$$

N: Number of different screens visited during task
S: Total number of screens visited during task
R: Minimum number of screens must visited to complete a task
L: User lostness (struggle) to complete task

HMI

Accuracy and Precision

Accuracy is how close a given set of measurments (observation or readings) are to their true value.

Precision is how close the measurements are to each other.

Accuracy Form.

True Value = M

$$\text{Percentage error} = \frac{|\text{Measured value} - \text{True Value}|}{\text{True value}} \times 100$$

Precision Form.

Precision = M ± Average deviation

MAXIMUM LIKELIHOOD

is to Find the optimal way to Fit a distribution to the data.

The reason, to Fit distribution to data, it can be easier to work with, and it's also more general - it applies to every experiment of the same type.

Normal

$MLE = \hat{\mu} = \bar{X}$

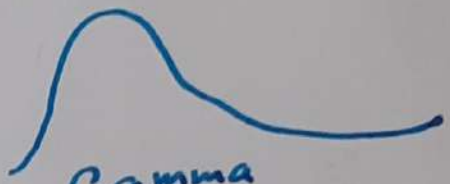
$= \frac{1}{n} \sum X_i$

$\hat{\sigma}^2 = \frac{1}{n} \sum (x_i - \bar{X})^2$

Exponential

$\lambda = \frac{1}{\bar{X}}$

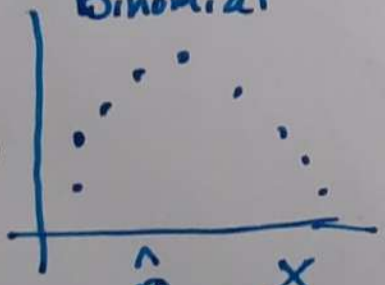
$= \frac{n}{\sum X_i}$



Gamma

$\mu = k\theta = \frac{\alpha}{\beta}$

$\sigma^2 = k\theta^2 = \frac{\alpha}{\beta^2}$



Binomial

$\hat{p} = \frac{X}{n}$ = Average.