RNG_Ashwini malviya

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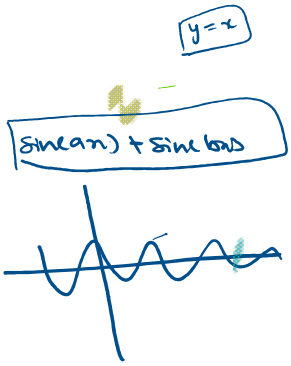


$T_s > 10$.

RNG-APIs
- Tests
- scipy
- APIs
- Dieharid Suite
- Existing RNG's.

Sin ax + Sin bx

1. Frequency test
   Implement RNG.

k.s test:-

emerical distribution function → cummutive probability distribution function.

↳ given set or sequence with another distribution.

k.s - test

(1) Define hypothesis:-

$H_0 \quad f(x) = f_0(x)$

$H_1 \quad f(x) \neq f_0(x)$

$x_1, x_2, x_3, x_4 \ldots$

check they are form uniform (a, b) distribution

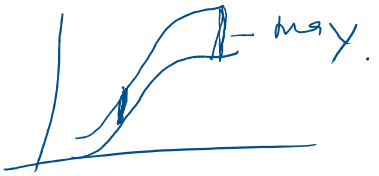
$$f(x) = \frac{1}{b-a} \qquad a < x < b$$

$$f_0(x) = \int_a^x f(x)\, dx = \frac{1}{b-a}(x-a) \qquad a < x < 2$$

$f_0(x) = 0 \qquad x < 0$

$f_0(x) = 1 \qquad x > b$

$$F_n(x) = \frac{g(x)}{n}$$



$D = \max \left| F_n(x)_k - f_0(x)_k \right|$

tolerance. | Compare n with 40.

D > critical value

Not randomly drawn.

Two distributions

fn_1 fn_2

X_1, X_2, X_3 Y_1, Y_2, Y_3.

$$D_{n_1,n_2} = \sup_x |F_{n_1}(x) - F_{n_2}(x)|$$

Correlation :-

$$\text{correlation} = \frac{\text{Cov}(x, y)}{\sqrt{\text{Var}(x)\,\text{Var}(y)}}$$

$$= \frac{\text{Cov}(y_t, y_{t-k})}{\sqrt{\text{Var}(y)\,\text{Var}(y_{t-k})}}$$

So we finised

(1) K-S test

(2) Autocorrelation test.