Statistical Significance Testing

This project is published with "Finite sample corrections for parameters estimation and significance testing",

by Boon Kin Teh, Darrell JiaJie Tay, Sai Ping Li, and Siew Ann Cheong. Please refer to the paper for more details, and cite the paper if you are using this code for significance testing analysis, Thank you.

# Code: SignificanceTesting\_PL/ SignificanceTesting\_EXP

**Perform statistical significance testing for power law/exponential distribution.**

**Inputs:**

1) Data: 1xN array for observations (hypothetically power law/exponential distributed)

2) PerformInvFormale: Set to 1 if wish to perform the significance testing using fast inversion formule (Fast).

3) PerformCSN: Set to 1 if wish to perform the significance testing using CSN method (very slow).

**Outputs:**

Result = SignificanceTesting\_PL(Data,1,1);

1) Result: A structure format data, to call output:

Data = Result.Data; %Inputs (1xN array for observations)

Sample\_Alpha = Result.Sample\_Alpha; %Estimated Alpha

Sample\_Xmin = Result.Sample\_Xmin; %Estimated Xmin

Sample\_KSDistance = Result.Sample\_KSDistance; %Measured KS distance

Sample\_DistributionNoise = Result.Sample\_DistributionNoise; %Measured Distribution noise

Sample\_NumFittedSample = Result.Sample\_NumFittedSample; %Number of data fitted to power law distribution

%(if PerformInvFormale==1)

FIF\_KS = Result.FIF\_KS; %P-value (in percentage) based on KS distance using Fast inversion formule

FIF\_DN = Result.FIF\_DN; %P-value (in percentage) based on distribution noise using Fast inversion formule

FIF\_KSDN = Result.FIF\_KSDN; %P-value (in percentage) based on KS distance and distribution noise using Fast inversion formule

%(if PerformCSN==1)

CSN\_KS = Result.CSN\_KS; %P-value (in percentage) based on KS distance using CSN method

CSN\_DN = Result.CSN\_DN; %P-value (in percentage) based on distribution noise using CSN method

CSN\_KSDN = Result.CSN\_KSDN; %P-value (in percentage) based on KS distance and distribution noise using CSN method

# Code: FittingResultPlot

**Plot the fitting results**

**Inputs:**

1) Result: Result obtained from SignificanceTesting\_PL or SignificanceTesting\_EXP

**Outputs:**

A plot for the fitting results