Simulation Lab(MC503)

Assignment-7

Try to solve all the problems

Check the **goodness-of-fit** of the given distribution function using the **Kolmogorov-Smirnov test** for different size samples. (*Here, select sample size as 10,30,25,40,32 and the level of significance is 0.05.)

1. Distributions with the given CDF as:

   i) Uniform Distribution

   $$F_X(x) = \frac{x-2}{5-2},\ 2 < x < 5.$$

   ii) Lindley Distribution

   $$F_x(x;\theta) = 1 - \frac{\theta + 1 + \theta x}{\theta + 1} e^{-\theta x},\ x > 0,\ \theta > 0.$$

2. Distributions with the given PDF as:

   i) Normal Distribution

   $$f_X(x;\mu,\sigma) = \frac{1}{\sqrt{2\pi}\sigma} \exp\left\{-\frac{(x-\mu)^2}{2\sigma^2}\right\},\ x \in \mathcal{R},\ \mu \in \mathcal{R},\ \sigma > 0.$$

   ii) Generalized exponential distribution

   $$f_X(x;\alpha,\beta) = \alpha\beta e^{-\beta x}\left(1 - e^{-\beta x}\right)^{\alpha-1},\ x > 0,\ \alpha,\beta > 0.$$

   iii) Kumaraswamy Distribution

   $$f_X(x;\alpha,\beta) = \alpha\beta x^{\alpha-1}(1-x^{\alpha})^{\beta-1},\ x \in (0,1),\ \alpha,\beta > 0.$$

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