Simulation Lab(MC503)

Assignment-8

Try to solve all the problems

Check the **goodness-of-fit** of the given distribution function using the **Chi-square test** for different size samples. (*Here, select sample size 1000, and the level of significance is 0.05.)

1. The number of scooter accidents per month in a certain town whereas follow:

   12 8 20 2 14 10 15 6 9 4

   Are these frequencies in agreement with the belief that accident conditions were the same during this 10 months period?

2. Distributions with the given CDF as:

   i) Uniform Distribution

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

   ii) Lindley Distribution

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

3. 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

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

. . . . . end . . . . . .