



Department of Computer Engineering

CENG 222
Statistical Methods for Computer Engineering
Assignment #3

Due Date: May 3, 2017, Wednesday 11:55PM

A fisherman goes to a lake to catch some fish. The number of fish he can catch in an hour is a Poisson random variable with $\lambda = 4$. The weight of each caught fish is a continuous random variable in kilograms with the following probability density function:

$$f(x) = \begin{cases} 0 & x < 0 \\ 0.4x^3 - 0.6x^2 + 0.3 & 0 \leq x \leq 1 \\ -1.2(x-1)^3 + 1.8(x-1)^2 + 0.1 & 1 < x \leq 2 \\ 1.2(x-2)^3 - 1.8(x-2)^2 + 0.7 & 2 < x \leq 3 \\ 0 & x > 3 \end{cases}$$

(a) Conduct a Monte Carlo study to estimate the probability that the total weight of the fish he catches in 3 hours is more than 25 kgs. With probability 0.95, your answer should differ from the true value by no more than 0.005. Use Normal approximation to determine the size of your Monte Carlo simulation.

(b) Based on the study in part (a), estimate the total weight, X , of the fish he catches in 3 hours.

(c) Estimate $\text{Std}(X)$ and comment on the accuracy of your estimator of X .

Submission

Submit your Matlab source code and a short report that describes the Monte Carlo study and answers the questions in parts (a), (b), and (c).