AI1103-Assignment 2

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Download all python codes from

https://github.com/AravindShounik/AI1103/blob/
    main/Assignment−2/Codes/assignment−2.py

and latex-tikz codes from

https://github.com/AravindShounik/AI1103/blob/
    main/Assignment−2/assignment−2.tex

QUESTION GATE EE 2016,Q. 9

Shaquille O'Neal is a 60 % career free throw shooter, meaning that he successfully makes 60 free throws out of 100 attempts on average. What is the probability that he will successfully make exactly 6 free throws in 10 attempts?

SOLUTION

Let X be the random variable denoting the number of times it makes a free throw successfully in 10 attempts. Then by Binomial distribution,

$$\Pr(X = 1) = p \tag{0.0.1}$$

$$\Pr(X = k) = \binom{n}{k} p^k (1 - p)^{n-k} \tag{0.0.2}$$

$$k = 0, 1, 2, ..., n \tag{0.0.3}$$

For the given problem, $n = 10$ and $p = 0.6$ because we get an average of 60 successful attempts in 100 attempts.
For making exactly 6 successful throws
From (0.0.3),

$$\Pr(X = 6) = \binom{10}{6} (0.6)^6 (0.4)^4 \tag{0.0.4}$$

$$= 0.250822656 \tag{0.0.5}$$