11.16.3.17.1

EE24BTECH11015 - Dhawal

Question:
For an event A, $p(A) = 0.42$. Find $p(A^c)$.

Theoritical Solution:

$$p(A^c) = 1 - p(A) \tag{1}$$
$$p(A^c) = 0.58 \tag{2}$$

Computational Solution:
The Bernoulli R.V is defined as,

$$X_i = \begin{cases} 0 & A^c \\ 1 & A \end{cases} \tag{3}$$

The PMF represents the probability of each outcome in the sample space S . For this

$$S = [0, 1],$$

the PMF is given as:

$$p_X(n) = \begin{cases} 1 - 0.42 & n = 0 \\ 0.42 & n = 1 \\ 0 & n \notin S. \end{cases} \tag{4}$$

Simulation Process

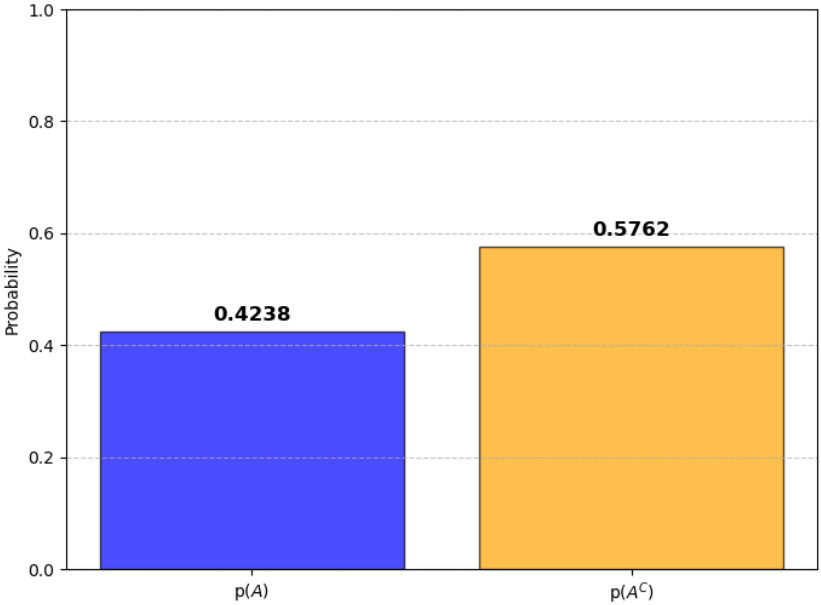
Using random function 1000 times obtain 0 or 1, where $p(1) = 0.42$

$$p(A) = \frac{\text{Number of 1}}{1000} \tag{5}$$
$$p(A^c) = \frac{\text{Number of 0}}{1000} \tag{6}$$

Final Solution

We get,

$$p(A) = 0.4238 \tag{7}$$
$$p(A^c) = 0.5762 \tag{8}$$


1.0
0.8
0.6
0.4
0.2
0.0
Probability
0.4238
0.5762
p(A)
p(A^C)