AI5002 - Assignment 2

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Download code and LaTeX from below hyper-links
1. Code
2. LaTeX

Problem **1.18.**

Two players, Sangeeta and Reshma, play a tennis match. It is known that the probability of Sangeeta winning the match is 0.62. What is the probability of Reshma winning the match?

Solution

Given, Probability of Sangeeta winning the match $P(\overline{S_w}) = 0.62$.

Then Probability of Reshma winning the match (i.e, Probability of Sangeeta not winning the match.) be $P(\overline{S_w})$.

We know,

$$P(S_w) + P(\overline{S_w}) = 1$$

$$\implies 0.62 + P(\overline{S_w}) = 1$$

$$\implies P(\overline{S_w}) = 0.38$$

This is a Bernoulli distribution whose probability of win of Reshma and Sangeeta is shown in Fig 1.

Problem **1.19.**

Harpreet tosses two different coins simultaneously (say, one is of rupee 1 and other of rupee 2). What is the probability that she gets at least one head?

Solution

When two coins are tossed, then the set of all possible outcomes would be = {HH, HT, TH, TT}.
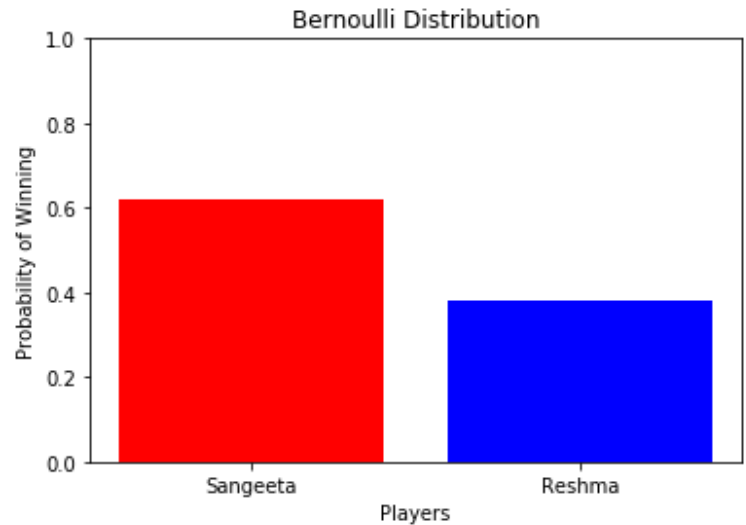

Fig 1: Bernoulli distribution of Reshma's winning

Thus, the total possible number of outcomes is given by

$$n(T) = 4.$$

Let E be the event of getting at least one head.

Then the set of favourable outcomes would be = {HT, TH, HH}.

So the number of favourable outcomes is given by

$$n(E) = 3.$$

The probability that Harpreet gets at least one head is

$$P(at\ least\ one\ head) = \frac{n(E)}{n(T)}$$

$$P(at\ least\ one\ head) = \frac{3}{4}$$

$$P(at\ least\ one\ head) = 0.75$$

This is again a Bernoulli distribution whose probability of at least one head and no head from two coin tosses is shown in Fig 2.
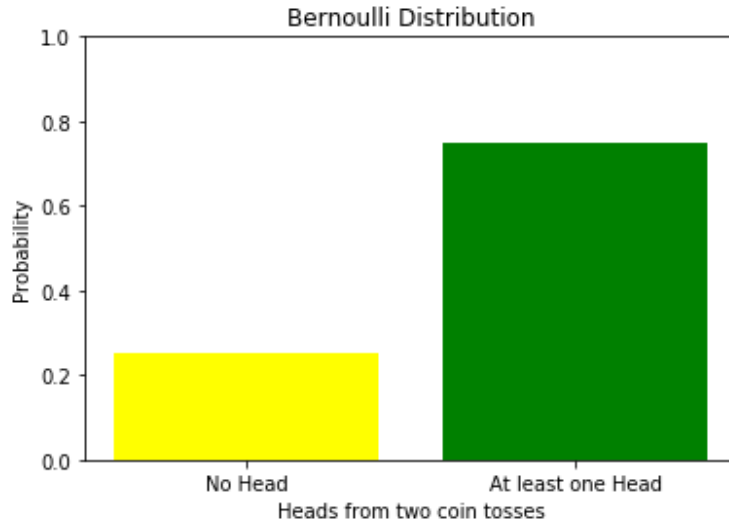

Fig 2: Bernoulli distribution of at least one head from two coin tosses