# **Glossary**

#### 1. Hypergeometric Distribution

When the population is finite and the sampling is done without replacement, so that the events are stochastically dependent, although random, we obtain Hypergeometric distribution.

# 2. Mean

The mean or average is the sum of the numbers divided by the total number of data points.

# 3. Variance

A measure of the average distance between each of a set of data points and their mean value; equal to the sum of the squares of the deviation from the mean value.

# 4. Factorial Moments

Factorial Moments is the expectation of X power r is equal to summation over k is equal to r to n, k power r into p of x is equal to k

Is equal to summation over k, k power r into M c k into N minus M c n minus k divided by N c n

# 5. Recurrence relation

A recurrence relation is an equation that recursively defines a sequence, once one or more initial terms are given: each further term of the sequence is defined as a function of the preceding terms

#### 6. Approximation

An approximation is a representation of something that is not exact, but still close enough to be useful.

# 7. Sampling

Sampling is selection of observations to acquire some knowledge of a statistical population

#### 8. Stochastic Process

A Stochastic Process is one whose behavior is non-deteministic, in that a system's subsequent state is determined both by the process's predictable actions and by a random element.

#### 9. Summation

Summation is the operation of adding a sequence of numbers; the result is their sum or total and is denoted as<sup> $\Sigma$ </sup>.

# 10. Expectation

The expectation value is the predicted mean value of the result (measurement) of an experiment.

# 11. Binomial distribution

A distribution which gives the probability of observing X successes in a fixed

number (n) of independent Bernoulli trials. p represents the probability of a success on a single trial.

#### 12. Principle of Maximum Likelihood

In statistics, maximum-likelihood estimation (MLE) is a method of estimating the parameters of a statistical model. When applied to a data set and given a statistical model, maximum-likelihood estimation provides estimates for the model's parameters.

# 13. Discrete Random Variable

A type of random variable which may take on only a limited set of values, such as 1,2,3,...,10. The list may be finite, or there may be an infinite number of values. A discrete random variable is to be contrasted with a continuous random variable.

#### 14. Lambda

In probability theory, lambda represents the density of occurrences within a time interval, as modelled by the Poisson distribution. Lambda uppercase symbol is  $\Lambda$  and lowercase symbol is  $\lambda$ .

#### **15. Probability Mass Function**

Variability between observations made at the same values of the independent variable or variables is probability mass function.