Glossary

1. Asymptotic

Asymptotic is an adjective meaning of a probability distribution as some variable or parameter of it (usually, the size of the sample from another distribution) goes to infinity.

2. Combinatronics

Combinatorics is a branch of mathematics concerning the study of finite or countable discrete structures. Aspects of combinatorics include counting the structures of a given kind and size, deciding when certain criteria can be met, and constructing and analyzing objects meeting the criteria, finding "largest", "smallest", or "optimal", and studying combinatorial structures. Combinatorial problems arise in many areas of pure mathematics, notably in algebra, probability theory, topology, and geometry.

3. Constant

Constant is something that is unchanging or invariable, or that is continually occurring.

4. Cumulant

The cumulants kn of a probability distribution are a set of quantities that provide an alternative to the moments of the distribution. The moments determine the cumulants in the sense that any two probability distributions whose moments are identical will have identical cumulants as well, and similarly the cumulants determine the moments.

5. Factorial

The factorial of a non-negative integer n, denoted by n!, is the product of all positive integers less than or equal to n. For example,

 $5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

6. Frequency distribution

Frequency distribution is an arrangement of the values that one or more variables take in a sample. Each entry in the table contains the frequency or count of the occurrences of values within a particular group or interval, and in this way, the table summarizes the distribution of values in the sample.

7. Moment

Moment is the expected value of a positive integral power of a random variable. The first moment is the mean of the distribution.

8. Moment Generating Function

Moment-generating function of a random variable is an alternative specification of its probability distribution. Thus, it provides the basis of an alternative route to analytical results compared with working directly with probability density functions or cumulative distribution functions.

9. Probability density function

Probability density function (pdf), or density of a continuous random variable, is a function that describes the relative likelihood for this random variable to take on a given value. The probability for the random variable to fall within a particular region is given by the integral of this variable's density over the region. The probability density function is nonnegative everywhere, and its integral over the entire space is equal to one.

10. Probability distribution

Probability distribution is a function that gives the probability of all elements in a given space.

11. Random variable

In probability and statistics, a random variable or stochastic variable is a variable whose value is subject to variations due to chance (i.e. randomness, in a mathematical sense). As opposed to other mathematical variables, a random variable conceptually does not have a single, fixed value rather; it can take on a set of possible different values, each with an associated probability.

12. Sigma

 Σ "sigma" = summation. This is upper-case sigma. Lower-case sigma σ , means standard deviation of a population. The order of operations, such as Σx^2 as opposed to $(\Sigma x)^2$ should be given careful consideration.

13. Theta

In statistics, θ , the lowercase Greek letter 'theta', is the usual name for a (vector of) parameter(s) of some general probability distribution.

14. Univariate

A frequency distribution of only one variate is called univariate distribution.

15. Variance

The variance is a measure of how far a set of numbers is spread out. It is one of several descriptors of a probability distribution, describing how far the numbers lie from the mean (expected value). In particular, the variance is one of the moments of a distribution.