Probability Distribution

Types

1. Discrete Probability Distribution

Used for discrete random variables, which are variables that take specific, separate values. Examples include the number of heads in a series of coin tosses or the number of cars passing through a checkpoint. A discrete probability distribution is described by a probability mass function (PMF), which assigns a probability to each value of the random variable.

Types

1. 1 Binomial Distribution

- **Characteristics: Defined by two parameters - the number of trials (n) and the probability of success (p) in each trial.**

Types

1. 2 Poisson Distribution

- Characteristics: Often used for counting the number of events in a fixed interval of time or space, with a known average rate (λ) and independently of the time since the last event.

Types

2. Continuous Probability Distribution

Used for continuous random variables, which can take any value within a continuous range. Examples include the height of individuals in a population or the time it takes for a machine to fail. A continuous probability distribution is defined by a probability density function (PDF), which describes the relative likelihood for the random variable to take on a given value.

Types

2. 1 Normal Distribution (Gaussian Distribution)

- **Characteristics: Symmetrical, bell-shaped curve, defined by its mean (μ) and standard deviation (σ). It's one of the most important distributions in statistics.**

Types

2. 2 Exponential Distribution

- Characteristics: Used to model the time until the next event (like failure or success) occurs. It's characterized by the rate parameter (λ).