Statistics for IT

POISSON DISTRIBUTION

Week 4

Binomial Experiment

- It is used for events that occurs randomly in a specified unit of space, distance or time
  - A fixed number of trials (n)
  - Each trial should be success or failure
  - The trials are independent
  - The probability of success (p) at each trial is a constant

Binomial random variable

- A binomial random variable is the number of successes (s) in 'n' repeated trials of a binomial experiment

Binomial Distribution

- The probability distribution of a binomial random variable is called a binomial distribution

  X ~ Bin(n,p)
- The probability function of a binomial distribution is

  $P(x) = {}^{n}C_{x}\ p^{x}q^{n-x}$ where q=1-p
- Eg: A coin is tossed 10 times. Find the probability of getting exactly 3 heads

  $P(x) = {}^{n}C_{x}\ p^{x}q^{n-x}$

  $P(3) = {}^{10}C_{3}\ 0.5^{3}0.5^{10-3}$

  = 0.117

Mean & variance of a binoimial distribution

- E(x) = np
- V(x)=npq