??? ????????

6.2 ????

?? 6.2.1 ?$(X_1, X_2,...,X_n)$?????X??????$g(X_1,X_2,...,X_n)$???????g??????????$g(X_1,X_2,...,X_n)$??????????

6.2.2 ?????????

?$(X_1, X_2,...,X_n)$?????$X \sim N(\mu, \sigma^2)$????????$(X_1, X_2,...,X_n)$?????????????

??$X_i \sim N(\mu, \sigma^2), (i=1,2,...n)$?? $$E(\overline{X}) = \Sigma_{i}^{n} \frac{1}{n}E(X_i) = \frac{1}{n} \Sigma_{i}^{n}E(X_i) =\mu$$

$$D(\overline{X}) = \Sigma_{i}^{n}\frac{1}{n}D(X_i) = \frac{1}{n^2} \Sigma_{i}^{n}D(X_i) = \frac{\sigma^2}{n}$$

????????????????????????? $$\overline{X} \sim N(\mu, \frac{\sigma^2}{n}), Z= \frac{\overline{X} - \mu}{\sigma/\sqrt{n}}$$

????????$E(S^2) = \sigma^2$

6.2.3 ?????????

1. χ^2 ??

?? 6.2.2 ?$(X_1, X_2,...,X_n)$?????$X \sim N(0?1)$???????????$$\chi^2 = \Sigma_{i}^{n}X^2_i$$??????n? χ^2 ?? ??$$\chi^2 \sim \chi^2(n)$$?

χ^2 ?????

(1). $\chi_1^2 \sim \chi^2(n_1), \chi_2^2 \sim \chi^2(n_2)$, ?$\chi_1^2 , \chi_1^2$?????? $\chi_1^2 + \chi_1^2 = \chi^2(n_1 + n_2)$

(2). $E(\chi^2) = n, D(\chi^2) = 2n$??????

?????$(X_1, X_2,...,X_n)$?????$X \sim N(\mu, \sigma^2)$?????????$$\chi^2 = \Sigma_{i=1}^{n}\big(\frac{X_i-\mu}{\sigma}\big)^2 = \chi^2(n)$$

?? 6.2.1 ?$(X_1, X_2,...,X_n)$?????$X \sim N(\mu, \sigma^2)$??????????$\overline{X}$?????S^2?????????$$\frac{(n-1)S^2}{\sigma^2} \sim \chi^2(n-1)$$????

?? 6.2.3 ?????X??????$F(X)$,???????$\alpha(0 \lt \alpha \lt 1)$,???$c$??$P(X>c)=\alpha$,??$c$?$X$?$\alpha$????

2. t??

?? 6.2.2 $X \sim N(0?1)? Y\sim \chi^2(n)$?, ?$X,Y$??????????$$ T = \frac{X}{\sqrt{\frac{Y}{n}}} $$??????n? t ?? ??$$T \sim t(n)$$?

?? 6.2.2 ?$(X_1, X_2,...,X_n)$?????$X \sim N(\mu, \sigma^2)$???????????? $$T = \frac{\overline{X}-\mu}{S/ \sqrt{n} } \sim t(n-1)$$????

2. F??

?? 6.2.3 $X \sim \chi^2(m)? Y\sim \chi^2(n)$?, ?$X,Y$??????????$$ F = \frac{X/m}{Y/n} $$??????n? F ?? ??$$F \sim F(m,n)$$?

???$T \sim t(n)$, ?$T^2 = \frac{X^2/1^2}{[\sqrt{\frac{Y}{n}]^2}} \sim F(1,n)$

F ?????

(1). ?$F \sim F(m,n)$?? $\frac{1}{F} \sim F(n,m)$

(2). $F_\alpha(n,m) = \frac{1}{F_{1-\alpha}(m,n)}$??????

??6.2.4 ?$(X_1, X_2,...,X_n)$?????$X \sim N(\mu_1, \sigma_1^2)$?????? $(Y_1, Y_2,...,Y_n)$???$Y\sim N(\mu_2, \sigma_2^2)$?????,?$X,Y$???? S_1^2, S_2^2?????????????????$$F = \frac{S_1^2/\sigma_1^2}{S_2^2/\sigma_2^2 } \sim F(m-1, n-1)$$