Notes on Statistics

Dec. 32, 2999

1 Distributions from random samples

1.1 Random samples and statistics

Definition 1.1. The random variables $X_1, \cdots, X_n$ are called a ramdom sample of size n from the population $f(x)$ if they are independent and identically distributed with pdf or pmf $f(x)$, or iid random variables. Let $T(x_1, \cdots, x_n)$ be a real-valued or vector-valued function whose domain includes of sample space of $(X_1, \cdots, X_n)$, then the random variable or random vector $Y = T(X_1, \cdots, X_n)$ is called a statistic, whose distribution is called the sampling distribution of Y.

Theorem 1.2. *This is another theorem.*

Proof. This proves the theorem. $\square$

Example 1.3. This is an example.

2 Point estimation

Example 2.1. This is another example.

Remark 2.2. *This is just a remark.*

$$f_{\mathbf{U}}(u_1, \cdots, u_n) = \sum_i f_{\mathbf{X}}(h_{1i}(u_1, \cdots, u_n), \cdots, h_{ni}(u_1, \cdots, u_n)) \left| J_i \right|, \tag{1}$$