Probability and Statistics, Theory and Applications

Statistical Inference: Theory and Methodology

Model $f(y; \theta)$, Likelihood $L(\theta; y^o)$

Data $y^o$

Lectures: M, W 10-11 1073 Discussion F 1073

Evaluation: Assignments: ±10 15% Discuss, but individual work!
Tests: 3 @ 15
Final: 40%

Background: Chap 2, 3, 4, Parts 5, 6
Current: Chap 8, 9, Parts 11, 9.6, 10.5

Supplementary material

$f(y; \theta) \xrightarrow{\text{System}} y^o \xrightarrow{\text{Supp}} f(y; \theta)$

http://fisher.uleal.toronto.edu/dfraser/documents/352f
Topics

Model 7.1
Likelihood 8.1, 8.4
p-Value 2.4
Bayes s-Value 9.6
Confidence dist’n 10.5
Least squares 9.1, 9.2
Projections 11.2
Orthogonal Transf’s 8.2
Unbiasedness 9.3
Sufficiency 8.4
Factorization criterion 8.4
Exponential models 8.5
Location models 11.1
Sampling, simulation
Rejection sampling
Importance sampling
McMC
Bootstrapping
Default priors, Jeffreys

Generating functions 5.6, 5.7
Saddlepoint
p* h*
Anciarity
Model decomposition

Thomas Kuhn
Paradigm shift
René Girard
Mimesis imitation
\begin{align*}
F(y) & = \text{distn fn = df} \\
& = P(y \leq y') \\
\text{Continous case } F \text{ cont} \\
\text{Obtain Lemma} \\
\text{Theorem} \\
\text{variance } y \text{ df } F(y) \\
p\text{-values}
\end{align*}
Quantile function

\[ q(10\%) = 10\% \text{ cdf of any } \]
\[ q(90\%) = 90\% \text{ cdf } \]
\[ (q(10\%), q(90\%)) = 80\% \text{ interval} \]

\[ df \ F(y) \quad \text{Cont} \]
\[ qf \ F'(u) \]

Simulation want \( y \sim F(y) \)

Go \( U(0,1) \Rightarrow u \rightarrow y = F^{-1}(u) \)

\( U \{0,1, \ldots, 9\} \) /10 at each point