Minimax:(Assignment 1)

Nonrandomized Minimax: 找到每列最大值，然后取最小值

Risk set of all randomized generated by the set of rules D:所有点连线，圈里

Risk point of minimax rule in D: Risk set intersect with

Define minimax rule in D in terms of rules in D: 交点占已有D点的比例

Find which prior on , minimax rule also a bayes rule: if prior is (p,1-p), then slope =

also, slope = slope of the line where minimax point is on. Bayes is (p,1-p) on

Given prior, determine bayes rule: given , slope = -. 从下往上移动这条线和圈的第一个交点，bayes risk = ,(x,y)为交点坐标

-minimax: Risk point position(x,y) 圈里 (x+epsilon,y+epsilon)点往坐下部分

Posterior density : g(x)= h( post prob

if 先验概率= gamma， 后验概率必然=gamma。

Bayesian estimator: = E(gamma) or calculate:

with absolute loss: m is Bayesian estimator.

Tutorial 2:

Find SUFFICIENT STATISTIC (1)

Prove something is NOT SUFFICIENT (4)

MINIMAL SUFFICIENT (7)

Cramer-Rao Bound (11-)

XY JOINT DENSITY (13)

UMVUE, Discrete density function with x=0 or 1 (14)

MLE (22)

ASYMPTOTIC DISTRIBUTION (22)

Tutorial 3

MLR (1)

UMP alpha test, POWER FUNCTION (2)

MOST POWERFUL TEST (3)

REJECTION REGION (3)

MULTIVALUE HYPOTHESIS TESTING (4)

REAL VALUE find UMP alpha test (6)

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| Bernoulli(p) | x=0,1 0<=p<=1 | Ex = p | Var X = p(1-p) | Ex^2 = p |  |
| Binomial(n,p) | x = 0,1,2,…,n 0<=p<=1 | Ex=np | Var X = np(1-p) | Ex^2 = np(np+p+1) |  |
| Geometric(p) | x=1,2,… 0<=p<=1 | Ex=1/p | Var X = (1-p)/p^2 | Ex^2 = 1/p^2 |  |
| Poisson() | x=0,1,… 0<= | Ex = | Var X = | Ex^2 = |  |
| Beta(α,β) | 0<=x<=1 a>0,b>0 | Ex = | Var X = |  |  |
| Exponential(β) |  | Ex = β | Var X = β^2 | Ex^2 = 2B^2 |  |
| Gamma(α,β) |  | Ex =αβ | Var X =α\*β^2 | Ex^2 =(α^2+β)\*β^2 |  |
| Normal(μ,σ^2) |  | Ex =μ | Var X =σ^2 | Ex^2 =μ^2+σ^2 |  |
| Uniform(a,b) |  | Ex = (a+b)/2 | Var X = (b-a)^2/12 |  |  |

积分

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If f(x) is one para expansional, T = sum(xi) is sufficient and complete for theta.(minimal)