

Stat 543 Assignment 5
(not to be collected, but fair game on Exam I, February 21, 2005)
Maximum Likelihood, E-M Algorithm, (SEL) Bayes Estimation

1. Problems: 2.2.30, 2.2.35, 2.2.39
2. As in the first problem on Assignment 1, suppose that X_1, X_2, \dots, X_{10} are iid exponential with mean θ . That is, suppose that the marginal pdf is

$$f(x|\theta) = I[x \geq 0] \frac{1}{\theta} \exp\left(-\frac{x}{\theta}\right)$$

Suppose further that what is observed is not the X_i , but rather Y_1, Y_2, \dots, Y_{10} for

$$Y_i = X_i \text{ rounded to the nearest integer}$$

Write out an E-M algorithm for finding the MLE of θ based on the the available data.

3. Write out an E-M algorithm for finding the MLE of \mathbf{p} based on all data collected in the three studies mentioned in the 3rd problem of Assignment 1.
4. Problems 3.2.1, 3.2.2, 3.2.3, 3.2.4