17. Exercise: ML estimation

Exercise: ML estimation

1/1 point (graded)

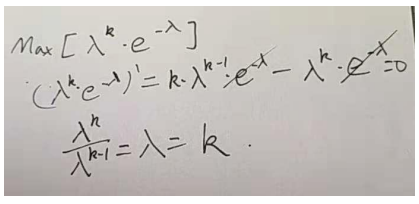
Let K be a Poisson random variable with parameter λ: its PMF is

$$p_K(k;\lambda) = \frac{\lambda^k e^{-\lambda}}{k!}, \qquad \text{for } k = 0, 1, 2, \ldots.$$

What is the ML estimate of λ based on a single observation $K = k$? (Your answer should be an algebraic function of k using standard notation.)

k

✔ **Answer:** k



Solution:

We maximize the logarithm of the PMF, which is $k \ln \lambda - \lambda - \ln(k!)$. Setting the derivative of this expression with respect to λ to 0, we obtain $(k/\lambda) - 1 = 0$, so that $\hat{\lambda}_{ML} = k$.

提交 You have used 1 of 3 attempts

ℹ Answers are displayed within the problem

讨论

Topic: Unit 8 / Lec. 20 / 17. Exercise: ML estimation

显示讨论