

MATH 472/572 Computational Statistics - Spring 2020

Homework 2 - Due January 30, Thursday

Instructor: Leming Qu

Rules for HW:

- You are allowed to discuss HW with fellow students in the course, but the work you hand in must be your own.
- You have to write your own Python code by yourself. You are prohibited from sharing, copying or editing any Python code from other students.

How to turn in your coding portion of the HW?

- Submit your code in Jupyter Notebook format (.ipynb file) through the blackboard HW link. The deadline for code submission is the class starting time 1:30PM of the due date.

How to turn in your non-coding portion of the HW?

- If you submit your answer in hard copy, turn it in to the instructor during class on the due date.
- If you submit your answer in electronic copy (.pdf file), submit it through the blackboard HW link.

Coding Assignments:

- (1) Write a Python script that implements the Newtons method in Example 2.2 on page 27 and produces Figure 2.3 of the *Computation Statistics* book.
- (2) Problem 2.2 on page 54 of the *Computation Statistics* book.

Non-Coding Assignments:

- (3) Let X_1, \dots, X_n be a random sample from the Bernoulli(p) distribution. Find the Fisher information $I(p)$.
- (4) Let $\{(X_i, Y_i)\}, i = 1, \dots, n$ be a random sample from the joint density

$$f(x, y|\theta) = \exp \left\{ - \left(\theta x + \frac{y}{\theta} \right) \right\}, \quad x > 0, y > 0.$$

Find the Fisher information $I(\theta)$.