STAT 522 : Multivariate Statistical Analysis
Optional Problems
March 10, 2023

Notes: [1] You are required to work by yourself or in groups on course projects and submit your final reports before 11am on April 28, 2023, Friday. The project will contribute 30/100 to your final grade.

[2] Each group may consist of one, two, or three students.

[3] The projects may come from the optional problems below or be proposed by the students themselves upon the approval of the instructor.

[4] Each optional problem can only be reserved by one team. First come, first serve. You are allowed to switch your optional problem if it has not been reserved by other team, but no later than 11am on March 31, 2023.

[5] If you plan to propose your own project, you need to email the instructor your working title and a brief description of your proposed project as soon as you could and get the instructor's approval no later than 11am on March 31, 2023.

Optional Problems

Please see below for a list of statistical concepts. You may choose one of them to write an article about it.

1. Hotelling's T^2 (page 55 of lecture notes)
2. General likelihood ratio method (page 64 of lecture notes)
3. Confidence region (page 65 of lecture notes)
4. Simultaneous confidence intervals (page 69 of lecture notes)
5. Repeated measures design (page 83 of lecture notes)
6. MANOVA (page 92 of lecture notes)
7. Wilks' lambda (page 94 of lecture notes)
8. Box's test for equality of covariance matrics (page 106 of lecture notes)
9. Bartlett's multiplier (page 110 of lecture notes)

You are very welcome to propose other names upon the instructor's approval.

Guidelines for Course Project Report

(1) Your final report is expected to be submitted in doc or pdf file with length between 10 pages and 15 pages.

(2) Your report may consist of (i) one-page summary of your report in plain English; (ii) an introduction about the concept and its history in statistics; (iii) the connections between the concept and the course Stat 522; (iv) some real or potential applications of the concept based on its connection with Stat 522; (v) references supporting your report.

(3) Your report is expected to be readable and self-contained. More specifically, your report is expected to be easy to follow by your Stat 522 classmates, and your one-page summary is expected to be friendly for more general audience. If you are willing to share your report with other Stat 522 classmates, please explicitly say so when you submit your report. In that case, you may receive additional +2 bonus points.

(4) Please do not simply copy sentences from existing webpage, articles, books, or other publications. Use your own sentences instead. If you want to cite the original sentence, please use quotation marks to identify the sentence. Any source (webpage, journal article, book, etc) that is relevant to your report should be carefully listed in your references and mentioned in the context. Please refer a scientific journal article on how to cite a reference properly.