KANSAS STATE UNIVERSITY | Department of Statistics

Applied Classical and Modern Multivariate Statistical Analysis

Date: Wednesday, August 15, 2018.

Location: Dickens Hall 207, Kansas State University

Instructors: Dr. Weixing Song (KSU) and Dr. Juan Du (KSU)

Duration: 9 hours.

Cost: Free to KSU students, staff and faculty. Funding for this workshop is provided by Shell Oil.

Capacity: Limited to 30 participants.
Contact Dr. Song to RSVP. (weixing@ksu.edu)

Contents: This workshop provides a relatively broad introduction to commonly used techniques for analyzing multivariate data. Basic exploratory tools for summarizing and visualization of the multivariate data will be introduced, and the classical multivariate statistical inference procedure, such as multivariate mean comparison, tests on covariance matrix from multivariate normal distribution, correspondence analysis, principal component analysis and classification will be covered. If time permits, this workshop will also discuss some modern multivariate analysis methods for regressions and classifications, such as support vector machines, and tree-based methods. Statistical theories for all topics will be kept at a minimum level, and extensive examples will be used to illustrate how to implement the relevant statistical procedures using R.

Schedule:

Time	Topic
8:00 am	Module 1: Introduction to R
9:00 am	Module 2: Visualization and Summarization
10:00 am	Module 3: Multivariate Normal and Related Distribution
11:00 am	Module 4: Inferences on Means and Covariances
12:00 pm	Lunch: on your own
1:00 pm	Module 5: Principal Component Analysis
2:00 pm	Module 6: Factor Analysis
3:00 pm	Module 7: Classification and Clustering
4:00pm	Module 8: Computer Aided Techniques: SVM and Tree Based Methods
5:30pm	Q and A

Notes:

- Although no prior experience programing with R is required, some familiarities with R will be very helpful.
- You will need a laptop with power cable all the time in the workshop.
- Have R software installed on your laptop before the workshop. We will use R Studio for illustration.
- A list of required R packages will be emailed to all participants at least one day before the workshop.