BSAN 750 (3 credit hours)
Data Mining and Machine Learning
Fall 2023

Website: https://shaobo-li.github.io/ML-Fall2023.html

Class Time: T, H 11am– 12:15pm, CAPF 3056

Instructor: Shaobo Li, Ph.D. (shaobo.li@ku.edu)
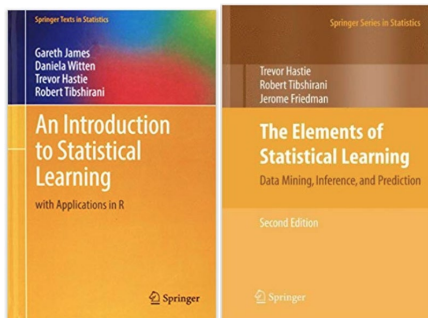 Office Hours: T, H 4-5pm or by appointment
  Office: CAPF 3166

Teaching Assistant: Amin Abbasi Pooya (abbasi@ku.edu)
  Office hours: Monday 1-2pm or by appointment
  Office: CAPF 4046 (for office hour)

Recommended Textbook:

Prerequisites: College level courses on
- Mathematics
- Probability and statistics
- Programming

Course description: The course introduces different machine learning techniques and how they are applied to real world problems. The course heavily relies on statistical programming R. Students are also encouraged to explore related materials and different programming languages by their own.

Course Outcomes:
- Master level of computer programming skills
- Know popular machine learning algorithms
- Know fundamentals of machine learning theories
- Know how and why a specific algorithm works
- Know when a method works and when it does not

Assignments: There will be 6 individual assignments and 3 group assignments. The due date will be announced on Canvas at the time when an assignment is posted. All assignments should be submitted electronically through Canvas.

Quizzes: There will be 4 quizzes throughout the semester. Quizzes are individual but open-book and open-notes and should be taken online through Canvas. **AI tools are NOT allowed.**

Final group project: At the end of the semester, each group will work on a project utilizing machine learning techniques to solve real world problems. The project must be based on real data which has not been used in the classroom. More details will be provided later.

Grading:
- Weights: Assignments 40%; Quiz 40%; Final group project 20%

- Final letter grade: [90%, 100%] A and A-
                         [80%, 90%)   B+ and B
                         [70%, 80%)   B- and C+
                         [60%, 70%)   C and C-

Email communication:
To make sure that your message is not accidentally deleted as junk, please include '**BSAN750**' in the **email subject** line. Also, be sure to identify yourself in the message.

Attendance: You are required to attend all classes. An early notice must be sent to the instructor via email if you will miss a class or have possible late submission due to health-related issue, travel, or other emergencies.

Accommodation for students with disabilities
The Student Access Center (SAC) coordinates academic accommodations and services for all eligible KU students with disabilities. If you have a disability for which you wish to request accommodations and have not contacted SAC, please do so as soon as possible. The SAC is located in 22 Strong Hall and can be reached at 785-864-4064 (V/TTY). Information about the SAC's services can be found at https://access.ku.edu/. Please also contact the instructor privately in regard to your needs in this course.

Handling Depression: KU Counseling and Psychological Services (CAPS)

ACADEMIC CODE OF HONOR
The KU School of Business seeks to develop future leaders with the highest ethical standards. It is through a strong code of conduct that a feeling of mutual trust and respect between students, faculty, and staff is maintained. This code of conduct was developed by the students, faculty, and staff to articulate the School's core values and provide guidance on academic integrity. This code applies to the conduct of students, faculty, and staff at any function or academic activity conducted by the School of Business at the University of Kansas. https://business.ku.edu/honor-code.

If cheating is found, anyone involved will be given 0 grade, and case will be reported to university.

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Tentative Schedule

Week	Topic	Assignment (due on Monday)
1 Week of 8/21	Introduction, R programming	
2 Week of 8/28	R programming	HW1 (Individual) due on 8/28
3 Week of 9/4	Machine Learning Basics **Quiz1 on Thursday**	HW2 (Individual) due on 9/4
4 Week of 9/11	Simple ML algorithms: Clustering	
5 Week of 9/18	Simple ML algorithms: k-nearest neighbor	HW3 (Individual) due on 9/18
6 Week of 9/25	Linear regression **Quiz2 on Thursday**	HW4 (Individual) due on 9/25
7 Week of 10/2	Linear regression	
8 Week of 10/9	Linear regression	HW5 (Individual) due on 10/9
9 Week of 10/16	**No class on Tuesday (Fall Break)** Variable selection	
10 Week of 10/23	Variable selection **Quiz3 on Thursday**	HW6 (Group) due on 10/23
11 Week of 10/30	Logistic regression	
12 Week of 11/6	Logistic regression	HW7 (Individual) due on 11/6
13 Week of 11/13	Tree-based methods **Quiz4 on Thursday**	
14 Week of 11/20	Tree-based methods **No class on Thursday (Thanksgiving Break)**	HW8 (Group) due on 11/20
15 Week of 11/27	Support vector machine	
16 Week of 12/4	Neural networks	HW9 (Group) due on 12/4
Final week	**Group project presentation on 12/14, 11am-1pm**	

* The instructor reserves the right to change this syllabus.