BSAN 750 (3 credit hours)
Data Mining and Machine Learning
Fall 2024

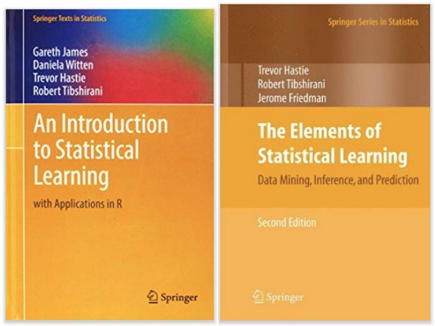
Website: https://shaobo-li.github.io/ML-Fall2024.html

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

Instructor: Shaobo Li, Ph.D. (shaobo.li@ku.edu)
Office Hours: M, W 3-4pm or by appointment
Office: CAPF 3166

Teaching Assistant:

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:

- Understand and able to apply popular machine learning methods to real life data analysis
- Understand fundamentals of machine learning theories
- Understand how and why a specific algorithm works
- Understand when a method works and when it does not
- Master level of computer programming skills
- Comfortable in using modern AI tools (e.g., ChatGPT) for coding and data analysis

BSAN750 Data Mining and Machine Learning (Fall 2024)

Assignments: There will be 5 individual assignments and 2 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.

Assessment: There will be 4 quizzes throughout the semester. Quizzes are individual and timed (60-75 minutes). Each quiz has two parts: conceptual questions (closed-book) and data analysis (open-book).

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%] (or top 30%)	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.

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.

Other recourses and policy information:

- Sexual Harassment
- Nondiscrimination, Equal Opportunity, and Affirmative Action
- KU Statement on Diversity and Inclusion
- Academic Misconduct (USRR 2.7.1)
- Change of Grade Policy and Change of Grade (USRR 2.4.1) (i.e., grade appeal)
- Code of Student Rights and Responsibilities
- Commercial Note-Taking
- Mandatory Reporting
- Racial and Ethnic Harassment Policy
- Counseling and Psychological Services
- University Academic Support Centers: Resources
- KU Writing Center

BSAN750 Data Mining and Machine Learning (Fall 2024)

Tentative Schedule

Week	Topic	Assignment (due on Monday)
1 Week of 8/26	Introduction, basic stats, data, and programming	
2 Week of 9/2	Basic stats, data and programming	
3 Week of 9/9	Machine Learning Basics **Quiz1 on Thursday**	HW1 (Individual)
4 Week of 9/16	Simple ML algorithms: Clustering	
5 Week of 9/23	Simple ML algorithms: k-nearest neighbor	HW2 (Individual)
6 Week of 9/30	Linear regression **Quiz2 on Thursday**	
7 Week of 10/7	Linear regression	HW3 (Individual)
8 Week of 10/14	**No class on Tuesday (Fall Break)** Linear regression	
9 Week of 10/21	Variable selection	HW4 (Individual)
10 Week of 10/28	Variable selection **Quiz3 on Thursday**	
11 Week of 11/4	Logistic regression	HW5 (Group)
12 Week of 11/11	Logistic regression	
13 Week of 11/18	Tree-based methods **Quiz4 on Thursday**	HW6 (Individual)
14 Week of 11/25	Tree-based methods **No class on Thursday (Thanksgiving Break)**	
15 Week of 12/2	Neural network	HW7 (Group)
16 Week of 12/9	Group project Q&A	
Final week Week of 12/16	**Group project presentation** **12/16, 11am-1pm**	

* The instructor reserves the right to change this syllabus.