TEXAS A&M UNIVERSITY

SYLLABUS

Course title and number	CSCE 633: Machine Learning
Term	Fall 2019
Meeting times and location	MWF 1:50pm-2:40pm HRBB 124
Course Website	eCampus

Course Description and Prerequisites

Machine learning is a sub-field of Artificial Intelligence that gives computers the ability to learn and/or act without being explicitly programmed. Applications of machine learning have permeated many aspects of every-day life and can be found among others in self-driving cars, speech recognition, computer vision, and genomics. Topics include supervised and unsupervised learning (including parametric and non-parametric models, clustering, dimensionality reduction, deep learning), optimization procedures, and statistical inference.

Prerequisites: CSCE 420 or CSCE 625 or consent of instructor

Learning Outcomes or Course Objectives

The objective of this course is to teach fundamental methods of machine learning with focus on the theoretical underpinnings, practical implementations, and experimentation. Students will be able to theoretically develop, practically implement, and test machine learning models on real datasets.

Instructor Information

Name	Bobak Mortazavi
Telephone number	979-458-2642
Email address	bobakm@tamu.edu
Office hours	Wednesday 10:30am-11:30am, Thursday 1pm-2pm
Office location	328A HRBB

TA Information

Name	Arash Pakbin
Email address	a.pakbin@tamu.edu
Office hours	TBD
Office location	331 HRBB

Textbook and/or Resource Material

- Required: Foundations of Machine Learning (2nd Edition), Mohri, Rostamizadeh, and Talwalker
- Recommended: The Elements of Statistical Learning (2nd Edition) Hastie, Tibshirani, Friedman
- Recommended: An Introduction to Statistical Learning with Applications in R, James, Witten, Hastie, Tibshirani

Grading Policies

1. Three assignments (including written and programming components), 10% each = 30%. Homework assignments will be described as the course progresses. Assignments will be due at the beginning of the class. **No late assignments will be allowed**.
2. Two exams (in class), 15% each = 30%.
3. Final project and presentation 40% (proposal 10%, completeness 20%, report and presentation 10%) Students will be in teams on projects that will be presented near the end of the semester. A final

technical paper on the project will be due the end of the final class meeting. Students will submit a project proposal for instructor review. Students may develop their own project or choose from a list of projects proposed by the instructor.

Grading Scale

The cutoff for an `A' will be at most 90% of total score, 80% for a `B', 70% for a `C', and 60% for a `D'. Anything below 60% will an 'F'.

Course Topics, Calendar of Activities, Major Assignment Dates

Week	Topic	Important Dates
1	Introduction + Supervised Learning (general) + Model Selection	
2	Linear Regression	
3	Logistic Regression	
4	Support Vector Machines	
5	SVM + Kernel Methods	
6	Random Forest	
7	Boosting	
8	Dimension Reduction + Clustering	Exam #1 In Class 10/14
9	Clustering + Neural Networks	
10	Deep Neural Networks	
11	Reinforcement Learning	
12	Online Learning + High Dimensional Problems	
13	Special Topics	Exam #2 In Class 11/22
14	Special Topics	
15	Project Presentations	Project Report Due 12/4

Other Pertinent Course Information

1. Computer accounts: if you do not have a unix account, ask for one on the CS web page.
2. Programming languages permitted: Python, R, or Matlab, and must be executable on CS unix hosts or other public systems in the department lab. If assignments must be coded in a different language, approval from the instructor and TA is needed before submitting.

Americans with Disabilities Act (ADA)

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you believe you have a disability requiring an accommodation, please contact Disability Services, currently located in the Disability Services building at the Student Services at White Creek complex on west campus or call 979-845-1637. For additional information, visit http://disability.tamu.edu.

Academic Integrity
For additional information please visit: http://aggiehonor.tamu.edu

"An Aggie does not lie, cheat, or steal, or tolerate those who do."