CSE 474/574 Fall 2017
Introduction to Machine Learning
http://www.cedar.buffalo.edu/~srihari/CSE574/index.html
M, W 6:30-7:50pm,   Knox 20

Description:

Machine learning is concerned with the theory, principles and algorithms for constructing programs that learn from examples. The methods are heavily based on probability theory and linear algebra.

Prerequisites:
Linear algebra, calculus and programming in Python

Reference Books:
Pattern Recognition and Machine Learning (PRML) by Chris Bishop (Springer 2006)
Probabilistic Graphical Models (PGM) by Daphne Koller and Nir Friedman (MIT Press 2009)
Deep Learning (DL) by Goodfellow, Bengio and Courville (MIT Press 2016)

Instructor: Sargur N. Srihari, 338C Davis Hall   Email: srihari@cedar.buffalo.edu

TA: Junfei (Piers) Wang, pierswang@buffalo.edu Office Hours: Mondays 3pm-5pm, Davis 338Z
Jun Chu, jchu6@buffalo.edu Office Hours: Wednesdays 4:30-6:30pm, Davis 338Z

Recitation: For CSE 474 is scheduled for Mondays 11:00-11:50 am in Clemens 217

Course Details

1. You are expected to attend all lectures and to complete all readings on time.

2. There will be three programming projects involving the following topics: probability, regression and classification.

3. All students should sign up for UB Learns.   Class notes will be posted there prior to class.   Projects and announcements will also be posted on this site. We will also be using Piazza to enable discussions. You should sign-up at https://piazza.com/class/iqnue1entyp4px

4.   Please read department policy on academic dishonesty; this will be enforced strictly.

Important Dates

Monday Aug 28	First Day
Monday, Sep 4	No class
Monday, Oct 16	Mid-Term
Wednesday, Dec 6	Last Lecture
Monday, Dec 11	Final Exam

Grading

Midterm	20%
Final	25%
Project 1	15%
Project 2	20%
Project 3	20%

COURSE SCHEDULE

Lecture Dates	Readings*	Topics	Lecturer	Assignments and Projects
Aug 28	Chap 1 PRML	Overview of ML	SNS	
Aug 30	Chap 1 PRML	Curve Fitting		
Sept 6	Chap 2 DL	Linear Algebra	SNS	
Sep 11	Chap 3 DL	Probability Theory		
Sept 13	Chap 3 PRML	Linear Regression	SNS	
Sep 18	Chap 4 DL	Numerical Methods		
Sept 20	Chapter 5 DL	ML Basics	SNS	Project 1 Due
Sep 25	Chapter 5 DL	ML Basics		
Sept 27	Chapter 5 DL	ML Basics	SNS	
Oct 2	Chapter 4 PRML	Classification		
Oct 4	Chapter 4 PRML	Classification	SNS	
Oct 9	Chapter 4 PRML	Classification		
Oct 11	Chapter 5 PRML	Neural Networks	SNS	
Oct 16	Chapter 5 PRML	Neural Networks		
Oct 18		Midterm Exam	SNS	
Oct 23	Chapter 6 PRML	Kernel Methods		Project 2 Due
Oct 25	Chapter 6 PRML	SVMs	SNS	
Oct 30	Chapter 3 PGM	Directed PGMs		
Nov 1	Chapter 4 PGM	Undirected PGMs	SNS	
Nov 6	Chapter 8 PRML	Mixture Models and EM		
Nov 8	Chapter 8 PRML	Bernoulli Mixtures	SNS	
Nov 13	Chapter 9 PRML	Approximate Inference		
Nov 15	Chapter 10 PRML	Sampling Methods	SNS	
Nov 20	Chapter 12 PRML	Sequential Data		
Nov 22		Thanksgiving	SNS	No Class
Nov 27	Chapter 6 DL	Deep Learning		
Nov 29	Chapter 7 DL	Deep Learning	SNS	
Dec 4	Chapter 8 DL	Deep Learning		Project 3 Due
Dec 6		Course Wrap-up	SNS	
Dec 11		Final Exam		