CIS-6930-001 - Machine Learning
Syllabus, Spring 2020

When: M,W 12:30-1:45PM; Where: CIS 1016
Instructor: Larry Hall, (lohall at mail dot usf dot edu); phone 974-4195
Office: ENB 330; Office Hrs. M. 2:30-3:30pm, W, Th. 11am-12p.m., or by appointment.
TA: Kaoutar Ben Ahmed, Office Hrs Tu. 11:00am-12:30pm, Th. 12-1:30pm at ENB215 or by appointment, kbenahmed@mail.usf.edu

Grading: There will be two tests each which will count 25% of the final grade. Homeworks, and quizzes will count 20%. A final exam will count 30%. A project will account for 1/2 the final exam grade. Grading scale: A $\geq$ 90, B $\geq$ 80, C $\geq$ 70, D $\geq$ 60, F <60.

General: The textbook is: *Introduction to Machine Learning, Third Edition* by Ethem Alpaydin. Each topic should be read about, before the lecture which pertains to it. We will also use the Weka data mining software for projects/homeworks. http://www.cs.waikato.ac.nz/ml/weka/. **No late work is accepted**!!
USF Core Syllabus Policy Statements: https://www.usf.edu/provost/

Course Objectives:
o Understand supervised machine learning methods and their application.
o Understand how to compare machine learning algorithms. Understand the trade-offs between algorithms and potential performance and time.
o Be able to read current literature on machine learning.
o Understand clustering unlabeled data

Week 1: Chapter 1, 2	What is Machine Learning, Supervised learning
Week 2: Chapter 2	Supervised learning
Week 3: Chapter 3	Bayesian Decision Theory
Week 4: Chapter 4	Parametric Methods
Week 5: Chapter 5,6	Multivariate Methods, Dimensionality Reduction
Week 6: Chapter 6	Dimensionality Reduction and Test 1
Week 7: Chapter 7	Clustering
Week 8: Chapter 9	Decision Trees
Week 9: Chapter 11.1-7	Multilayer Perceptrons
Week 10: Chapter 11.8- Notes	Multilayer Perceptrons, Deep Learning
Week 11: Chapter 13	Kernel Machines
Week 12: Chapter 19	Design and Analysis of Machine Learning Experiments , Test 2
Week 13: Chapter 17,19	" and Combining Multiple Learners,
Week 14: Chapter 8	Non-parametric methods
Week 15: Chapter 18	Reinforcement Learning

Final Wednesday May 6, 2020 10am-12pm

Project Homework

1. Supervised Learning (likely with Decision trees).
2. Supervised Learning using Deep Learning.
3. Comparing classifiers.