CSE 6363： Machine Learning, Fall 2019

Mondays 7 - 9:50 pm Location: ERB 130

Instructor: Dr. Chris Ding, 529 ERB, 204 ERB. Email: chqding@uta.edu
Office Hours: Mon/Tues 2 – 4 pm (and by appointment).

Teaching Assistant: Di Ming Email: di.ming@mavs.uta.edu
Office Hours: Mon/Wed 3– 5 pm, ERB 204

About the Instructor
Dr. Ding is a leading researcher in machine learning. His work on k-means clustering, nonnegative matrix factorization, L21 matrix norm, feature selection, etc, are well-known. His publications have been cited 41000 times. He has given invited seminars in UC Berkeley, Stanford, CMU, Univ of Waterloo, Univ of Alberta, Beijing Univ, Tsinghua Univ, Univ of Hong Kong, Natl Univ of Singapore, Google Research, IBM Research, Microsoft Research, etc. He has taught Machine Learning for 4 years.

Contents and Objectives:
Machine Learning is a subfield/combination of computer science, statistics and artificial intelligence. It helps computers to learn knowledge/patterns from examples/data instances. This course will cover the state-of-art machine learning techniques: classification, clustering, feature selection, dimension reduction, semi-supervised learning, and neural network/deep learning. This course is a study at advanced level. We assumes the students had taken courses such as "introduction to data mining", or "Introduction to artificial intelligence", etc. We assume students have good skills in math, algebra, statistics, and basic graph theory/algorithm.

After completing this course, students will understand machine learning at much deeper level, and be able independently analyze data, finding patterns in it, design and implement practical algorithms to solve complex problems. The course is designed with the goal of helping students to obtain "data scientist" positions at major IT companies, and/or conduct advanced research in machine learning.

Prerequisites:
Undergrad level Linear Algebra , Undergrad level Statistics, Computer Algorithms

Textbook:

Textbook:
Pattern Recognition and Machine Learning
Christopher Bishop
Springer, 2007.

Additional Textbook/reference books:

The following book contains the working knowledge of machine learning as required by IT professionals.

Elements of Statistical Learning,
T. Hastie, R. Tibishirani , J. Friedman
2nd edition, Srpinger, 2009
(Available online)

The class will have

- Homeworks   (10%)
- 3 written exams (40%)
- 3 computer projects/homeworks
- 3 computer exams (50%).
- Computer projects can be done by a team of at most 2 students. The codes must be submitted. Computer exam will make use of the codes developed in these projects.

The weights for final grade is given in percentages above. The final grading is based on students' **relative** performances, thus whether a particular exam is easy or hard will not change the final grading.

The final exam

- will consists of a written exam (60mins) and a computer exam(60mins)
- Date: Monday December 2, 2019. Starting 7:10pm. Location ERB 130
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Attendence is highly recommanded
Because the rapid advance of the field, we cover the most recent advances, which are not all covered in the textbooks.
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Americans With Disabilities Act
The University of Texas at Arlington is on record as being committed to both the spirit and letter of federal equal opportunity legislation; reference Public Law 93112 -- The Rehabilitation Act of 1973 as amended. With the passage of new federal legislation entitled Americans With Disabilities Act - (ADA), pursuant to section 504 of The Rehabilitation Act, there is renewed focus on providing this population with the same opportunities enjoyed by all citizens. As a faculty member, I am required by law to provide "reasonable accommodation" to students with disabilities, so as not to discriminate on the basis of that disability. Student responsibility primarily rests with informing faculty at the beginning of the semester and in providing authorized documentation through designated administrative channels.
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Student Support Services Available
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