

Syllabus

(Revised – March 25, 2020)

Spring 2020

CS 6301.505: Special Topics in Computer Science; Machine Learning for Engineers and Scientists (3 Semester Credit Hours)

Department of Computer Science, University of Texas, Dallas

Class Meetings

Mon, Wed, 5:30 pm to 6:45 pm in FO 2.702 (Online, effective March 30, 2020)

Instructor

Muhammad Ikram; Ph.D, P.E.

mzi@utdallas.edu

- Office Hours: After each lecture, or by appointment.

Teaching Assistant

Ninad Arun Khargonkar

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- Office Hours: By email.

Course Pre-requisites, Co-requisites, and/or Other Restrictions

- Familiarity with probability theory
- Familiarity with multivariate calculus and linear algebra
- Knowledge of basic programming skills

Course Description

This course is designed for engineers and scientists and covers the key and fundamental concepts of machine learning. Topics will include supervised and unsupervised learning, classification, regression, clustering, dimensionality reduction, and multiplayer perceptron. Students will learn the fundamental mathematical concepts of machine learning algorithms and practice them using open-source Python libraries.

Student Learning Objectives/Outcomes

It is expected that, at the end of the course, the students will

- Gain an appreciation for developing machine learning methods.
- Understand a wide variety of learning algorithms.
- Understand how to adapt and learn from evolving data.
- Apply the machine-learning model and algorithms to real-world problems and report the accuracy achieved.

Required Textbooks and Course Materials

There is no required textbook for the course. However, students may seek guidance from the following reference books:

- K. P. Murphy, *Machine Learning: A Probabilistic Perspective*, 1st Ed., Cambridge, MA: MIT Press, 2012
- C. M. Bishop, *Pattern Recognition and Machine Learning*, Springer, 2006.
- T. M. Mitchell, *Machine Learning*, McGraw Hill, 1997.

Grading Policy

- Homework, quiz, and assignment (online, effective 3/30/20): 40%
- Project: 25%
- Mid-term exam: 15%
- Final exam (online): 20%

Course and Instructor Policies

Effective March 30, 2020, all class meetings for the remainder of semester will be held online via Blackboard Collaborate. Class will be held at the same time; i.e., M/W, 5:30 pm to 6:45 pm.

Quiz and Final Exam will be posted online at a prescribed and previously announced time. Students will be allowed time to work on the exam and then to scan it and submit online. No makeup quiz or final exam will be allowed.

Honesty and Integrity: Students are expected to exhibit highest level of academic integrity and honesty. They are expected to work on and submit their very own assignments, homework, quiz, and exam.

Late homework, projects, quiz, or final exam will not be accepted.

Comet Creed

This creed was voted on by the UT Dallas student body in 2014. It is a standard that Comets choose to live by and encourage others to do the same:

“As a Comet, I pledge honesty, integrity, and service in all that I do.”

UT Dallas Syllabus Policies and Procedures

The information contained in the following link constitutes the University's policies and procedures segment of the course syllabus.

Please go to <http://go.utdallas.edu/syllabus-policies> for these policies.

The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.