CS6052 Intelligent Data Analysis
Fall Semester 2015

Objective: This course is designed to introduce students to the algorithmic and computational foundations of the field of data mining and analysis. Various types of data are examined for discovery of patterns embedded in datasets. Students are introduced to the mathematical foundations, algorithms, scalability, and complexity aspects for various data mining tasks. Issues relating to increasingly large size of datasets will be addressed. All algorithms are presented in the context of some real life applications.

Instructor: Raj Bhatnagar, 826 Rhodes Hall; (513)556-4932; Raj.Bhatnagar@uc.edu

Office Hours: Tuesday and Thursday 1:30-3:00PM, and by appointment

Textbook: Data Mining and Analysis: Fundamental Concepts and Algorithms. Authors: Mohammed J. Zaki and Wagner Meira Jr. Cambridge University Press. Most of the material will be form the text book and some additional study and reading material will be made available via the Blackboard.

Topics:

1. Introduction to Data Mining and Analysis (~1 class)
2. Types of Data and Data related issues (~1 class)
3. Classification: Basic concepts, decision trees, perceptrons, neural networks, rule-based, nearest-neighbor (~3 weeks)
4. Association Analysis: Various algorithms and applications (~2 week)
5. Clustering: Various algorithms, cluster validation, applications (~3 weeks)
6. Anomaly Detection: Some elementary algorithms (~1 week)
7. Graph, string, and time series concepts and mining (~2 weeks)

Evaluation:

Homeworks	25%
Mid-Term Tests (2)	25% (12.5% for each test)
Quizzes	25%
Final Exam (Comprehensive)	25%

Notes:
1. All homeworks are due on the date and time they are announced to be due.
2. Quizzes will be held on Blackboard and their times/dates will be announced in class and also via email from the blackboard announcement. Failing to see the announcement is not an acceptable excuse for not not taking a quiz.
3. Dates for mid-term tests will be announced in class and these will be held during approximately the 6th and the 11th weeks. No make-up tests unless evidence of significant emergency is presented.
4. All homeworks are expected to be done by every student individually. There will be no group assignments. Any plagiarism or unfair practice with regard to homeworks, tests, quizzes, or exams will be pursued and punished appropriately.