

FE 581

DATA MINING

SPRING 2015

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Data that are needed for making managerial decisions is accumulating at an increasing rate due to a number of technological advances. As a result of innovations such as the internet, electronic banking, point-of-sale devices, barcode readers and e-tailers, electronic data collection has turned out to be inexpensive. Consequently, data warehouses and data marts designed for managerial decision support contain huge amounts of data. Data mining that evolved from the disciplines of statistics and artificial intelligence is concerned with applying various techniques to make intelligent use of data repositories. There have been several successful applications in areas such as credit rating, database marketing, fraud detection, stock market investments and customer relationship management.

This course will examine methods that proved to be useful in recognizing patterns and making predictions. We will review applications and provide an opportunity for hands-on experimentation with data mining algorithms. At the end of the course students will have developed an understanding of the strengths and limitations of popular data mining techniques.

Textbook

Data Mining for Business Intelligence: Concepts, Techniques, and Applications in Microsoft Office Excel with XLminer by Shmueli, Patel, Bruce, Wiley-Interscience, 2nd Edition, 2010. ISBN 978-0-470-52682-8.

Tentative Course Schedule:

	TOPIC
Week 1 (Feb. 14)	Introduction to Data Mining
Week 2 (Feb. 21)	Supervised Methods: Classification and Prediction Problems
Week 3 (Feb. 28)	Classification Trees
Week 4 (Mar. 7)	Classification Trees, Regression Trees
Week 5 (Mar. 14)	Naïve Bayes Approach, K-nearest Neighbor Classification
Week 6 (Mar. 21)	Logistic Regression
Week 7 (Mar. 28)	Midterm Exam
Week 8 (Apr. 4)	Unsupervised Methods: Hierarchical Clustering
Week 9 (Apr. 11)	K-means Clustering
Week 10 (Apr. 18)	Neural Networks
Week 11 (Apr. 25)	Spring Break
Week 12 (May 2)	Time Series Analysis
Week 13 (May 9)	Principle Components Analysis
Week 14 (May 16)	Summary

Evaluation:

Homework: 30%

Midterm Exam: 30%

Final Exam : 35%

Participation: 5%