Course title: Data Mining in Accounting

Instructor: Efstathios Kirkos   Contact details: stkirk@ihu.gr

Semester: Spring

ECTS: 6

Workload during semester: 150 hours

Course overview

The Knowledge Discovery process, Data Mining, data preprocessing, association rules analysis, classification, clustering, data mining application in accounting

Course outline per week

1st week: Introduction, definitions, enablers of DM, DM tasks

2nd week: The KDD process, stages of DM, DM and Business Intelligence, mining different types of data, social impacts of DM, application of DM in Accounting

3rd week: Data preprocess, data cleaning, lost values, noise, new fields construction

4th week: Data preprocess, normalization, discretization, dimensionality reduction

5th week: Association Rules mining, market basket analysis, definitions, support and confidence, itemsets, apriori, AR with continuous data, Lift, restrictions based AR,

6th week: Classification, definitions, classification vs clustering, classification vs regression, supervised and unsupervised learning, classification stages (training, validation, usage), data overfitting, data preprocessing for classification, criteria for assessing classification methods.

7th week: Decision Trees, Neural Networks,

8th week: Bayesian Networks, Instance Based Classifiers.

9th week: Regression, Support Vector Machines, Genetic Algorithms

10th week: Data overfitting (more), model validation, confusion matrix, ROC curves, ensembles and hybrid classifiers

11th week: Clustering

12th week: Applications of Data Mining in Accounting I

13th week: Applications of Data Mining in Accounting II

Capabilities developed in the course

Capability 1: Retrieve, analyze and synthesize data and information with the use of necessary technologies
Capability 2: Make decisions
Capability 3: Autonomous and team work
Capability 4: Working in an interdisciplinary environment
Capability 5: Advance free, creative and causative thinking

Learning outcomes

Upon successful completion of this course, the student will be able to:

- Understand the characteristics, the potentialities and the limitations of the data mining methods
- Understand the successive steps of the knowledge acquisition process
- Perform data preprocessing
- Apply association rules, classification and clustering methods
- Analyze and evaluate the acquired patterns and knowledge
- Design and implement data analysis tasks in the context of data mining
- Apply data mining techniques for bankruptcy prediction, fraudulent financial statement detection, audit qualifications, credit risk estimation

Assessment methods

Assignments: 40%

Exams: 60%

NOTE: A student's assessed work may be reviewed for potential plagiarism or other forms of academic misconduct.

Delivery mode

Lectures

<u>NOTE</u>: The recording of any class on a personal device requires the permission of the instructor

Learning resources

Course material, ppt presentations, etc /Digital platforms: Eclass (eclass.gunet.gr) / Moodle

Reading list

1 Lecture notes

2 Han, Kamber and Pei, Data Mining concepts and techniques, Morgan Kaufman