

Customer and Marketing Analytics

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Overview

Data-oriented techniques for extracting patterns from sales, marketing, and customer data in order to support personalized marketing and customer relationship management. Propensity modeling & classification, association/rules analysis, dimensionality reduction, data clustering, text mining, collaborative filtering and social network analysis tools and techniques will be applied. The main objective of the course is to explain in detail the methodologies used in relationship marketing in order to gain actionable insights from data.

Key Outcomes

By completing the course the students will be able:

- To understand & apply standard data mining techniques such as propensity modeling for cross selling activities and data clustering for customer segmentation.
- Learn new trends on advanced analytics and discuss case studies for effective personalized marketing and customer relationship management.
- Gain practical intuition about how to apply these techniques on datasets of realistic sizes using modern data mining software.

Requirements and Prerequisites

The course requires a good knowledge in computer science, algorithms and data management. A basic knowledge of statistics and probability theory is essential.

Required Course Material

There is no required textbook. All course materials will be provided in class and will be available for downloading.

Available Textbooks

Recently many textbooks has been published on the subject:

- Data Mining Techniques in CRM: Inside Customer Segmentation by Tsiptsis and Chorianopoulos
- Effective CRM using Predictive Analytics by Chorianopoulos
- Principles of Marketing Engineering and Analytics by Lilien et al.
- Επιχειρησιακή Αναλυτική και Ποσοτικά Υποδείγματα Μάρκετινγκ και Διαδικτύου των Ρεπούση και Μπάλτα

Software/Computing requirements

Students will be able to run and work with most of the course material on their own computers using popular software tools like RapidMiner. The students will complete a project assignment using any software or any programming language / library they may prefer.

Grading

Students will be graded on their performance in one project assignment (50%) and on final exams (50%).

Participation

In-class contribution is an important part of our shared learning experience. Your active participation helps us to evaluate your overall performance. Please arrive to class on time and stay to the end of the class period. Chronically arriving late or leaving class early is unprofessional and disruptive to the entire class. Turn off all electronic devices prior to the start of class. Cell phones tablets and other electronic devices are a distraction to everyone. In lectures you need to use laptop you will be informed to do so.

Attendance Requirements

Class attendance is essential to succeed in this course. An excused absence can only be granted in cases of serious illness or grave family emergencies and must be documented. Job interviews and incompatible travel plans are considered unexcused absences. Where possible, please notify the instructor in advance of an excused absence.

Students are responsible for keeping up with the course material, including lectures, from the first day of this class, forward. It is the student's obligation to bring oneself up to date on any missed coursework.

Code of Ethics

Students may not work together on individual graded assignments unless the instructor gives express permission. Exercise integrity in all aspects of one's academic work including, but not limited to, the preparation and completion of all other course requirements by not engaging in any method or means that provides an unfair advantage. In any case of doubt, students must be able to prove that they are the sole authors of their work by demonstrating their knowledge to the instructor.

Clearly acknowledge the work and efforts of others when submitting written work as one's own. Ideas, data, direct quotations (which should be designated with quotation marks), paraphrasing, creative expression, or any other incorporation of the work of others should be fully referenced. No plagiarism of any sort will be tolerated. This includes any material found on the internet. Reuse of material found in question and answer forums, code repositories, other lecture sites, etc., is unacceptable. You may use online material to deepen your understanding of a concept, not for finding answers.

Course Syllabus

The course comprises 10 lectures of three hours each.

Week 1: Introduction to Marketing Analytics

Applications of supervised and unsupervised data mining techniques for customer relationship management, product positioning, brand management, segmentation and targeting, forecasting and marketing mix decisions. Discussion cases and examples from different industries.

Week 2 and 3: Classification and Propensity Modelling

Methodologies for effective classification and propensity modeling in marketing applications, such as cross/up selling and churn prediction. Predict customer value and customer journey. Comparison of different techniques (decision trees, neural networks, logistic regression and ensembles).

Week 4: Market Basket Analysis and Retail Analytics

Analysis of market basket data and generation of association rules. Introduction to retail analytics and optimization of retail store layouts based on product combination lifts.

Week 5 and 6: Segmentation and Profiling

Methodologies for value and behavioral based segmentation of customers. Various data sets and techniques will be discussed, including among others factor and PCA analysis, cluster analysis, social network analysis, perception maps, RFM modelling and optimization tools.

Week 7: Recommendation Systems

Application of item-based and product-based collaborative filtering techniques for making personalized recommendations.

Week 8: Text Analytics for Marketing Applications

Application of text analytics tools for analyzing customer reviews (opinion mining and sentiment analysis), document clustering, tag extraction and competitor identification.

Week 9: Presentation of group projects

In class presentation of student projects.

Week 10: Putting all together

Putting all data analysis tools and marketing techniques together for profiling, personalized marketing, next best activity per customer, recommendations and geo-location marketing. Deployment in real life applications.