

Literature Review Outline for Formative Feedback

Topic: Implementing Machine Learning tools and/or techniques in Customer Profiling

1. Introduction

1.1. Purpose of the review

1.2. Scope of the review

1.3. Methodology

1.3.1. Academic databases used

1.3.2. Keywords used

- To gather the relevant literature, the following keywords were used:
“customer profiling”, “user profiling”, “customer profiling machine learning”, “customer profiling challenges”, “customer profiling data mining”, “user profiling retail”, “user profiling artificial intelligence”, “profiling data mining”, “customer user profiling”, “demographic attribute prediction profiling”

2. Definition of customer profiling

2.1. Outlining the definition and key attributes of a customer

2.2. Outlining attributes that form a customer profile

2.2.1. Identification attributes

2.2.2. Socio-demographic attributes

2.2.3. Behavioural attributes

3. Data management and collection approaches to facilitate use of Machine Learning implementations for Customer Profiling

3.1. Explicit vs. implicit data capture

3.1.1. Explicit – surveys, customer feedback, registration and ordering data

3.1.2. Implicit data – website usage logs, cookie data

4. Overview of Machine Learning in Customer Profiling
 - 4.1. Importance of applying Machine Learning to Customer Profiling
 - 4.2. Overview of Machine Learning Techniques
5. Unsupervised Machine Learning techniques in Customer Profiling
 - 5.1. Clustering techniques – K-means, PCA
 - 5.2. Graph techniques – Community detection
6. Supervised Machine Learning techniques in Customer Profiling
 - 6.1. Tree-based methods – Decision trees, Random Forest
 - 6.2. Support Vector Machines
 - 6.3. Supervised Deep Learning techniques – Neural Networks
7. Semi-supervised Machine Learning techniques in Customer Profiling
8. Interpreting Customer Profiles defined by Machine Learning
 - 8.1. Black-box models and interpretability
 - 8.2. Effectiveness of Machine Learning in real-world scenarios
9. Challenges in big data mining using Machine Learning techniques
 - 9.1. Performance constraints
 - 9.2. Ethical challenges:
 - 9.2.1. Privacy issues
 - 9.2.2. Model bias in profiling
10. Conclusion