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A CRITICAL STUDY OF SELECTED CLASSIFICATION ALGORITHMS FOR LIVER DISEASE DIAGNOSIS

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ABSTRACT:

Patients with Liver disease have been continuously increasing because of excessive consumption of alcohol, inhale of harmful gases, intake of contaminated food, pickles and drugs. Automatic classification tools may reduce burden on doctors. This paper evaluates the selected classification algorithms for the classification of some liver patient datasets. The classification algorithms considered here are Naïve Bayes classifier, C4.5, Back propagation Neural Network algorithm, and Support Vector Machines. These algorithms are evaluated based on four criteria: Accuracy, Precision, Sensitivity and Specificity.

KEYWORDS:

Classification Algorithms, Data Mining, Liver diagnosis

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CUSTOMER DATA CLUSTERING USING DATA MINING TECHNIQUE

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ABSTRACT:

Classification and patterns extraction from customer data is very important for business support and decision making. Timely identification of newly emerging trends is very important in business process. Large companies are having huge volume of data but starving for knowledge. To overcome the organization current issue, the new breed of technique is required that has intelligence and capability to solve the knowledge scarcity and the technique is called Data mining. The objectives of this paper are to identify the high-profit, high-value and low-risk customers by one of the data mining technique - customer clustering. In the first phase, cleansing the data and developed the patterns via demographic clustering algorithm using IBM I-Miner. In the second phase, profiling the data, develop the clusters and identify the high-value low-risk customers. This cluster typically represents the 10-20 percent of customers which yields 80% of the revenue.

KEYWORDS:

Data mining, customer clustering and I-Miner

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HIGH CAPACITY DATA HIDING USING LSB STEGANOGRAPHY AND ENCRYPTION

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ABSTRACT

The network provides a method of communication to distribute information to the masses. With the growth of data communication over computer network, the security of information has become a major issue. Steganography and cryptography are two different data hiding techniques. Steganography hides messages inside some other digital media. Cryptography, on the other hand obscures the content of the message. We propose a high capacity data embedding approach by the combination of Steganography and cryptography. In the process a message is first encrypted using transposition cipher method and then the encrypted message is embedded inside an image using LSB insertion method. The combination of these two methods will enhance the security of the data embedded. This combinational methodology will satisfy the requirements such as capacity, security and robustness for secure data transmission over an open channel. A comparative analysis is made to demonstrate the effectiveness of the proposed method by computing Mean square error (MSE) and Peak Signal to Noise Ratio (PSNR). We analyzed the data hiding technique using the image performance parameters like Entropy, Mean and Standard Deviation. The stego images are tested by transmitting them and the embedded data are successfully extracted by the receiver. The main objective in this paper is to provide resistance against visual and statistical attacks as well as high capacity.

KEYWORDS

Steganography, Cryptography, plain text, encryption, decryption, transposition cipher, Least Significant Bit, Human Visual System, Mean square error and Peak Signal to Noise Ratio.

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A SURVEY ON EDUCATIONAL DATA MINING AND RESEARCH TRENDS

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ABSTRACT

Educational Data Mining (EDM) is an emerging field exploring data in educational context by applying different Data Mining (DM) techniques/tools. It provides intrinsic knowledge of teaching and learning process for effective education planning. In this survey work focuses on components, research trends (1998 to 2012) of EDM highlighting its related Tools, Techniques and educational Outcomes. It also highlights the Challenges EDM.

KEYWORDS

Educational Data Mining (EDM), EDM Components, DM Methods, Education Planning

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A XGBOOST RISK MODEL VIA EATURE SELECTION AND BAYESIAN HYPER-PARAMETER OPTIMIZATION

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ABSTRACT

This paper aims to explore models based on the extreme gradient boosting (XGBoost) approach for business risk classification. Feature selection (FS) algorithms and hyper-parameter optimizations are simultaneously considered during model training. The five most commonly used FS methods including weight by Gini, weight by Chi-square, hierarchical variable clustering, weight by correlation, and weight by information are applied to alleviate the effect of redundant features. Two hyper-parameter optimization approaches, random search (RS) and Bayesian tree-structured Parzen Estimator (TPE), are applied in XGBoost. The effect of different FS and hyper-parameter optimization methods on the model performance are investigated by the Wilcoxon Signed Rank Test. The performance of XGBoost is compared to the traditionally utilized logistic regression (LR) model in terms of classification accuracy, area under the curve (AUC), recall, and F1 score obtained from the 10-fold cross validation. Results show that hierarchical clustering is the optimal FS method for LR while weight by Chi-square achieves the best performance in XG-Boost. Both TPE and RS optimization in XGBoost outperform LR significantly. TPE optimization shows a superiority over RS since it results in a significantly higher accuracy and a marginally higher AUC, recall and F1 score. Furthermore, XGBoost with TPE tuning shows a lower variability than the RS method. Finally, the ranking of feature importance based on XGBoost enhances the model interpretation. Therefore, XGBoost with Bayesian TPE hyper-parameter optimization serves as an operative while powerful approach for business risk modeling.

KEYWORDS

Extreme gradient boosting; XGBoost; feature selection; Bayesian tree-structured Parzen estimator; risk modeling

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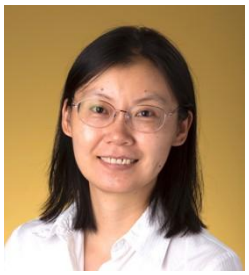

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EXPERIMENTAL EVALUATION OF NOSQL DATABASES

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ABSTRACT

Relational databases are a technology used universally that enables storage, management and retrieval of varied data schemas. However, execution of requests can become a lengthy and inefficient process for some large databases. Moreover, storing large amounts of data requires servers with larger capacities and scalability capabilities. Relational databases have limitations to deal with scalability for large volumes of data. On the other hand, non-relational database technologies, also known as NoSQL, were developed to better meet the needs of key-value storage of large amounts of records. But there is a large amount of NoSQL candidates, and most have not been compared thoroughly yet. The purpose of this paper is to compare different NoSQL databases, to evaluate their performance according to the typical use for storing and retrieving data. We tested 10 NoSQL databases with Yahoo! Cloud Serving Benchmark using a mix of operations to better understand the capability of non-relational databases for handling different requests, and to understand how performance is affected by each database type and their internal mechanisms.

KEYWORDS

NoSQL databases, SQL databases, performance evaluation, database models, YCSB

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APPROXIMATE K-NEAREST NEIGHBOUR BASED SPATIAL CLUSTERING USING K-D TREE

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ABSTRACT

Different spatial objects that vary in their characteristics, such as molecular biology and geography, are presented in spatial areas. Methods to organize, manage, and maintain those objects in a structured manner are required. Data mining raised different techniques to overcome these requirements. There are many major tasks of data mining, but the mostly used task is clustering. Data set within the same cluster share common features that give each cluster its characteristics. In this paper, an implementation of Approximate kNN-based spatial clustering algorithm using the K-d tree is proposed. The major contribution achieved by this research is the use of the k-d tree data structure for spatial clustering, and comparing its performance to the brute-force approach. The results of the work performed in this paper revealed better performance using the k-d tree, compared to the traditional brute-force approach.

KEYWORDS

Spatial data, Spatial Clustering, Approximate kNN, K-d tree, brute-force.

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A DATA QUALITY METHODOLOGY FOR HETEROGENEOUS DATA

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ABSTRACT

We present a Heterogenous Data Quality Methodology (HDQM) for Data Quality (DQ) assessment and improvement that considers all types of data managed in an organization, namely structured data represented in databases, semistructured data usually represented in XML, and unstructured data represented in documents. We also define a meta-model in order to describe the relevant knowledge managed in the methodology. The different types of data are translated in a common conceptual representation. We consider two dimensions widely analyzed in the specialist literature and used in practice: Accuracy and Currency. The methodology provides stakeholders involved in DQ management with a complete set of phases for data quality assessment and improvement. A non trivial case study from the business domain is used to illustrate and validate the methodology.

KEYWORDS

Data quality, Methodology, structured data, semistructured data, unstructured data

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CLOUD DATABASE DATABASE AS A SERVICE

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ABSTRACT

Cloud computing has been the most adoptable technology in the recent times, and the database has also moved to cloud computing now, so we will look into the details of database as a service and its functioning. This paper includes all the basic information about the database as a service. The working of database as a service and the challenges it is facing are discussed with an appropriate. The structure of database in cloud computing and its working in collaboration with nodes is observed under database as a service. This paper also will highlight the important things to note down before adopting a database as a service provides that is best amongst the other. The advantages and disadvantages of database as a service will let you to decide either to use database as a service or not. Database as a service has already been adopted by many e-commerce companies and those companies are getting benefits from this service.

KEYWORDS

Database, cloud computing, Virtualization, Database as a Service (DBaaS).

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DATA MINING TECHNIQUES: A SOURCE FOR CONSUMER BEHAVIOR ANALYSIS

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ABSTRACT

Various studies on consumer purchasing behaviors have been presented and used in real problems. Data mining techniques are expected to be a more effective tool for analyzing consumer behaviors. However, the data mining method has disadvantages as well as advantages. Therefore, it is important to select appropriate techniques to mine databases. The objective of this paper is to know consumer behavior, his psychological condition at the time of purchase and how suitable data mining method apply to improve conventional method. Moreover, in an experiment, association rule is employed to mine rules for trusted customers using sales data in a super market industry

KEYWORDS

Consumer behavior, Data mining, Association Rule, Super market

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