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Framework for Controlling Interference and Power Consumption on Femto-Cells In-Wireless System

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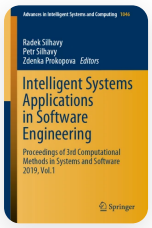

Intelligent Systems Applications in Software Engineering

(CoMeSySo 2019 2019)

P. T. Sowmya Naik & K. N. Narasimha Murthy

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Abstract

Utilization of femto-cells is one of the cost effective solution to increase the internal network connectivity and coverage. However, there are various impediment in achieving

Laplacian Matrix Based Spectral Graph Clustering

Ambika P. R., Bharathi Malakreddy A.

Abstract: ***Recent attention in the research field of clustering is focused on grouping of clusters based on structure of a graph. At present, there are plentiful literature work has been proposed towards the clustering techniques but it is still an open challenge to find the best technique for clustering. This paper present a comprehensive review of our insights towards emerging clustering methods on graph based spectral clustering. Graph Laplacians have become a core technology for the spectral clustering which works based on the properties of the Laplacian matrix. In our study, we discuss correlation between similarity and Laplacian matrices within a graph and spectral graph theory concepts. Current studies on graph-based clustering methods requires a well defined good quality graph to achieve high clustering accuracy. This paper describes how spectral graph theory has been used in the literature of clustering concepts and how it helps to predict relationships that have not yet been identified in the existing literature. Some application areas on the graph clustering algorithms are discussed. This survey outlines the problems addressed by the existing research works on spectral clustering with its problems, methodologies, data sets and advantages. This paper identifies fundamental issues of graph clustering which provides a better direction for more applications in social network analysis, image segmentation, computer vision and other domains.***

Keywords: Clustering, Laplacian, spectral graph.

I. INTRODUCTION

Clustering is one of the important process in Data Mining technology which groups similar data points into same cluster and dissimilar data points into different clusters based on similarity measures or dissimilarity measure. Most used similarity measures are Euclidean distance, cosine similarity, Manhattan distance measure, Jaccard coefficient etc. Clustering techniques identifies underlying structure and discovers meaningful data patterns from the clusters. Clustering has always been an active topic of research in today's Big Data world. In today's real world problems, data are collected in high dimensional space. Detecting clusters in high dimensional structures are a challenging task in the data mining problem . The difficulty that traditional clustering algorithms encounter in dealing with high dimensional data sets motivated the invention of subspace clustering, which has been studied extensively in recent years. The abundance of Dimensional Reduction (DR) methods invented to solve curse of dimensionality problem of High Dimensional Data (HDD)[5]. The present subspace clustering is more focused on improving clustering performance and not much research has been reported to assist in solving DR problems [6]. Recently, a new approach in clustering called spectral methods has started to get a lot of attention in data mining domain. The spectral methods for clustering works by computing the Eigen vectors of matrix based on the distance between points and then map them to clusters. Spectral Clustering has become quite popular over the last few years and several new algorithms have been published. Spectral graph theory deals with the connectivity structures in a graph by casting a graph to an algebraic structure and by analyzing the spectra of the same. The connectivity and Spectral Graph has been discussed by Mohar[21]. A standard clustering method using spectra of graph has been proposed by Shi &Malik[22]. Graph Laplacians have become a core technology for the computer vision and data analytics. Kannan et al., and Luxburg et al.[20], they have done numerous research contributions in clustering. Belkin 2003; Nadler et al., 2006, proposed works focused on dimensionality reduction using graph based clustering. These extensive literature works has provided several useful insights towards new emerging clustering methods and also discusses several gaps between theoretical concepts and Applications. In recent years, the spectral clustering method has gained attentions because of its better-quality clustering performance.

1.1 Background and Motivation

Graph based clustering draws much of the attentions of the research communities in recent days. This is because, graph is a natural way of representation of today's real life problems; especially in network based problems. Graph based clustering algorithms are useful for producing clusters where the problem is modeled by using graphs. Graphs are very useful to represent high dimensional unstructured data. So, graph based clustering for large, high dimensional datasets gaining popularity gradually. In Spectral clustering, using spectral graph theory data points are grouped together based on the similarity and Laplacian matrix concepts . Graph based clustering methods identifies the set of nodes of a known graph and assign them into clusters. The Laplacian matrix based clustering approaches are dominant at present. The spectral/eigenvector domain is a low-dimensional space where the data points are easily separable into different clusters .

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Development of Predictive Model to Improve Accuracy of Medical Data Processing using Machine Learning Techniques

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ABSTRACT: *Data mining is nothing but the process of viewing data in different angle and compiling it into appropriate information. Out of the many software tools used for data evaluation, the one which is widely used is the data mining. Technically the data mining can be considered as the sequence of steps followed for searching patterns or identifying correlations between large numbers of fields within a huge relational database. Recent improvements in the area of data mining and machine learning have empowered the research in biomedical field to improve the condition of general health care. Within the medical data, the medical data mining searches for patterns and relationships which can provide useful information for appropriate medical diagnosis. Data mining techniques are applied to different medical domains to improve the medical diagnosis. Improving the accuracy of the classification and improving the prediction rate of medical datasets are the main tasks/challenges of medical data mining. Since the wrong classification may lead to poor prediction, there is a need to perform the better classification which further improves the prediction rate of the medical datasets. When medical data mining is applied on the medical datasets the important and difficult challenges are the classification and prediction. In this proposed work we evaluate the data mining techniques like Logistic Regression (LR), Artificial Neural Networks (ANN), Support Vector Machines (SVM) and Random Forest (RF) with Feature Selection Methods (FSMs) and Percentage Split (PS) as test option on Diabetes Datasets. The performance of the proposed hybrid model is measured in the form of classification accuracy.*

Keywords: BE: Backward elimination; CA: Classification Accuracy; EE: Entropy Evaluation; FSM's: Feature Subset Selection Methods; FS: Forward selection.

I. INTRODUCTION

Recent improvements in the area of data mining and machine learning have empowered the research in biomedical field to improve the condition of general health care. In many parts of the world the tendency for maintaining long-lasting records consisting of medical data is becoming an accepted practice. In addition to this,the newer medical equipment's and the techniques used in diagnosis, produces composite and huge data. Therefore, to handle these ill-structured biomedical data, intelligent algorithms for data mining and machine learning are required in order to take logical reasoning from the saved raw data, which is considered as medical data miningthe newer medical equipment's and the techniques used in diagnosis, produces composite and huge data. Therefore, to handle these ill-structured biomedical data, intelligent algorithms for data mining and machine learning are required in order to take logical reasoning from the saved raw data, which is considered