SPDM in Social Media for the Development of Business

D. Gandhimathi, A. John Sanjeev Kumar

Abstract: In Modern era Social Media(SM) is a place of communication with collective information. Spatial Data Mining(SPDM) are acknowledged as mining of spatial knowledge among attractive pattern from various forms of Spatial Data. SPDM focus to theory and Methodology and process for extracting useful information through spatial data. Spatial Data are attributes of neighbors of selected object. SM and their role played in daily life increased considerably over the last few years. To examine collaboration among friends in a SM pattern of relationship is essential, for development of digitalized businesses in trading process. Data extracted with SPDM is utilized with KNG technique to identify the highly recommended product among clustered users. This paper illustrate the betterment of KNG while compared with KNN process using Spatial Data for the development of Business.

Keywords: Spatial Data Mining, Spatial Data , Social Media, KNG, KNN.

I. INTRODUCTION

Discovering significant pattern and trend from large volume of data from its repository are well-known as DataMining (DM). An application of DM techniques is SPDM. SPDM has deep roots in both traditional DM field such as Clustering, Classification, Association etc., Spatial analysis field- Spatial Analysis, Data Analysis, Cartography and so on. Data Analysis in Geography data is to locate near to one another in space which can share similar attributes. In modern era SM play a main role in day to day life . In the new dimension of Business SM act an intermediates for the development better Business and frame a relationship between SM and the business people which provides valuable information related to human behavior. The Research work is focus towards Twitter data to find unique traits of interest, likeness across location ad also tweets among multiple users. Twitter has become a popular data source for opinion mining and trend mining. Product suggestion to users on social sites is based on their social activities like location tag and time of the status update.

Focus of this paper with the usage of KNG in product suggestion. Finally execution, Performance of KNG is compared with KNN which help the business people to take improved decision for the improvement of business.

II. LITERATURE STUDY

[7] This thesis embodies research that aims at integrating the state-of-the-art in SPDM techniques using unsupervised data for Spatial Data Analysis in Social Network(SN) utilizing for development of Business. Data mining have an indispensable task, congregate data into significant subset to acquire useful information. The process of generating group of objects based on available data using similarity constrains for the available data set is acknowledged as Clustering. Exploration of hidden pattern of spatial data's from various applications such as Geographic information, Satellite imagery etc are distinct as Clustering spatial Data. [8][9] Mining of spatial data lead to identifying spatial data base consist of spatial related information are represented in multidimensional data with explicit knowledge object , position in space. Multidimensional model are suitable for SPDW(Spatial Data Warehouse).Global Information System(GIS) is responsible for extracting for spatial data in multidimensional model.[10] Developed workflow to integrate quality analysis using social media data (i.e Twitter,Facebook). Data related to learning process such as Feelings, Opinions and so on. Those data provide valuable information about student learning process.

III. SPATIAL DATA MINING

Decision process system originated from Database access . Later proceeded with DW. For the need of business people, DW act as major source for day today events. Through Client/Server technology improved user interface with better decision support system. Even the DW does not provide the expected solution for the business user. These weakness made the vendors to focus towards Technology, moderately than business solution. Developing operational application was boomed by many vendors. Later they identified Organization were looking for better business solution in the new trend of technology. This raise to the evolution of SPDM. Information in DW is documented ,easy access,complexity in limit warehouse usage for multiple Information users for various purpose. Using SPDM techniques behavior of Consumer in SM is analyzed to maintain the latest trends in trading with strategic solution. Benefits of SPDM is faster, more accurate reporting analysis for better business decision.
SPDM is a

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Technology driven process that make firms to analyze and make educated decision using raw spatial data

A. Abbreviations and Acronyms

The Abbreviations discuss in this paper are
(i) DM -   DataMining
(ii) DW-   DataWarehouse
(iii) SM -   Social Media
(iv) SPDM - SpatialDataMining
(v) KNG-   KNearestpointGroup
(vi) KNN-   KNearestNeighbor
(vii) SPD - SpatialData
(vii) BI-   Business Inteligence

IV. SPDM IN SOCIAL MEDIA

In recent trends the focus of Business environment toward a technology to compose a efficient and quick decision based of proper information at the right time. However, data collection from various customers are represented in different sources. The customers influence are significant factor to improve the company proceeds. The sense of reliability among a mixture of customers and admiration for the company's pains to provide them with a meaningful online experience. SM data provide past, existing, and analytical views of business operations, which are assemble either in a DW or a data mart. The collected data can be represented through various Software essentials to represented in an, interactive manner like "slice-and-dice" ,pivot-table analyses, visualization, and statistical data mining. The practice of collection, integration, analysis, with business information in the form of spatial representation are referred as SPDM . The work is focused towards Twitter data with each users latitude and longitude values(Spatial Location). Tweets from Twitter among various users, followers by using any gadget in different platform [8] are post using Twitter site. In recent years the SM data are focused by researchers and businesses people to study about human activity[9] The alternative data are extracted from the public Application Programming Interface (API) offers by twitter which enable public request a sample of Tweets according to particular investigate criterion [10]. Spatial queries as utilize to access better information through the mobile at point of the world. The Twitter data of active users with Spatial location along with similar likes for the list of products   is utilized in KNearestpointGroup(KNG) algorithm to identify highly recommended product based on specific location .These outcome can be as better business decision making process for most wanted product recommended by collective users.

V. KNG IN SPATIALDATAMINING FOR RECOMMENDATION

A. Dataset and Process

Twitter4j library is used to get twitter users data like userId, Favourites tweet ids.Location Details Extract from user tweets if location share is enabled. The users tweets/status userid, statusid, latitude, longitude, time, mentions from status are acknowledged as Dataset. Collect user data from twitter and find similar users using SPDM. To recommend a product for similar group of friends through SPDM

additional data sets are prepared such as Product detail. Overall process for product recommendation using KNearestpointGroup(KNG) is displayed in Fig.1 .

Fig 1 Product Recommendation Process

Where Products DataBase(DB) contains productsid, name, lat, lon, type. Spatial data is treated as products in most of the social spatial data research. name=unique name of products . lat, long are latitude and longitude of place. type= indicate type of product whether it is place or not. 0 =spatial product 1=non spatial product. Proposed model predict not only spatial items but also non spatial item by utilizing mentions in the tweets . KNG identified using KNearestNeighbor(KNN) with Euclidean distance, to recommend the nearest product based on the clustered users recommendation.

B. Methodology

Spatial Data(SPD) extracted from Twitter , recommend the product to particular classes of user with respect to time. KNearestpointGroup(KNG) algorithm is used in this work which has KNearestNeighbor with Euclidean distance that identify the product or points to the particular clustered users. Product suggestion to users on social sites using their social activities like location tag and time of the status update based on maximum weightage of probability score. Products are suggested based on nearest latitude and longitude of tweet user. The process is performed in Java 7 and MYSQL 5database. Fig 2 view the list of Product recommended by set of users.
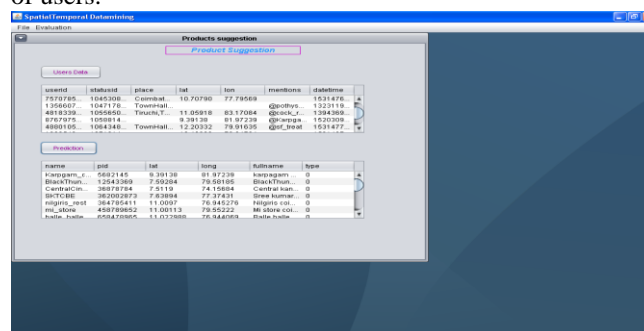

Fig 2 List of Products Recommended

From different perspective of multiple users in social media- Twitter , ongoing experiment provide us selected list of user from cluster identify the suggested products ,are listed based on the latitude and longitude values. The technical expertise can enable the location of their customer to make SPDM to visualize information more about their product accessible to individuals at all levels of to reveal previously overlooked relationships, patterns and trends.
Where Location information describe as an address, a delivery route a sales territory, equipment locations ,a service boundary which can be incorporated into front & back office applications, supply-chain through online customer service.

The invaluable KNG process exploit a set of methodologies to predict not only spatial items but also non spatial items by utilizing mentions in the tweets. Which help to analyze data using Spatial relationships, patterns and trends reveal for the betterment of a business applications. The analysis of Twitter data demonstrate that aggregative huge amount of data which depict behavior of humans their interest and likeness across various location.

VI. RESULT AND DISCUSSION

The performance of KNG algorithm is verified by means of performance matrix Such as Accuracy, Precision, Recall. Which is calculated using the following process Accuracy = TP+TN/TP+FP+FN+TN, Precision = TP/TP+FP, Recall = TP/TP+FN. Fig 3 describe the performance of KNG process.
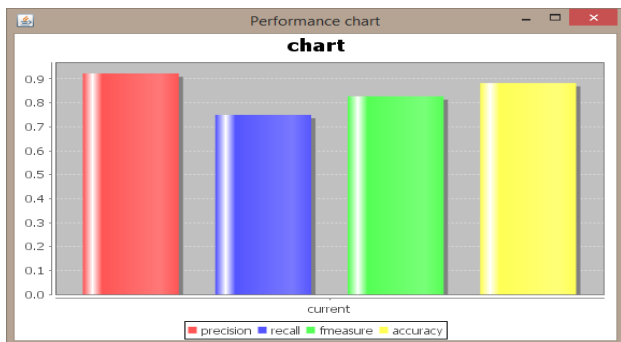

Fig 3 Performance metric of KNG

The performance of KNG is also compared with existing KNN algorithm for the same set of 1000 dataset collected from Twitter. Based on this process is displayed in fig 4.
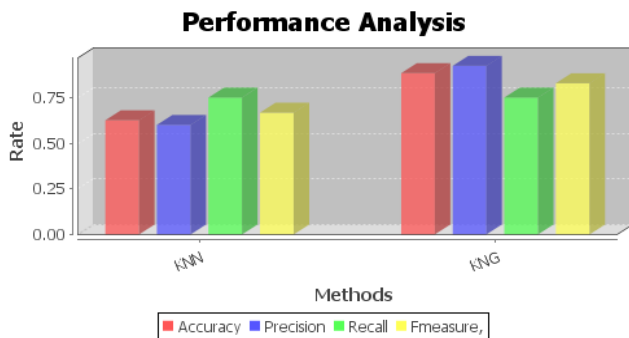

Fig. 4: Comparison Of KNG With KNN

Which describe in relation to proposed system –KNG with existing KNN algorithm in terms of precision, recall , fmeasure ,accuracy. In existing system the Accuracy: 0.62, Precision:0.6, Recall:0.75, Fmeasure:0.66. In proposed system the Accuracy:0.88, Precision:0.92, Recall:0.75, Fmeasure:0.827.
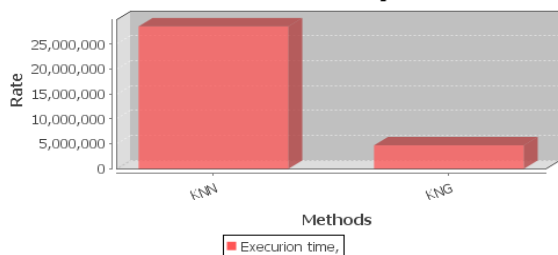

Fig.5 Comparison Of KNG & KNN

Execution time of our proposed system compared with existing knn algorithm is viewed in Fig .5. Execution time is considered by result the difference between end time and start time. The execution time taken for Proposed system is 4719509 nano sec. whereas the Existing system need 9168623 nano sec. Based on the above performance we highly recommend that KNG is most preferable for product recommendation which can be utilize for betterment of Business.

Through this KNG process, Product suggestion to clustered users on SM is based on their social activities like location tag and time of the status update data which helps for improved assessment to a digitalized business

VII. CONCLUSION

Attention towards Human activity can be scrutinized using SM data Twitter. The patterns of interest, likeness among clustered users in various location act as Spatial data, which are used in mining social networks. Based on this information, discover the relationship between clustered users and their interest towards recommend product. Product recommendation to particular classes of user with is invoked using KNG algorithm. Performance of KNG is compared with existing KNN algorithm. Business people are support by analysis of these relevant data can help a to predict the most wanted product in various location.

FUTURE WORK

Business Intelligence(BI) helps an organization to develop a good relationship between the customer to have better outcome for their environment. BI tool support the organization to predict for development by using various forms of business information, which is not only extracted from warehouse. Prediction analysis is used to find trends in data. Prediction perform as statistical measurement can be exploit in various areas- finance, investing and other disciplines to determine the strength of the relationship between one dependent variable. Prediction can perform using BI tool.

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