A Survey On Managing Telemedicine Database To Design Superior Web-based Computing Services

Tarique Raza, Rasika Bhosale, Kumari Niharika, Samruddhi Patil

Abstract— Many Web based technologies use database organizations as their backbone. Frequent changes and development in the information of these technologies is one of the main issues. We can see Web data organizations as a solution in terms of appreciable redesigns and controlling the information genuineness. At present, Web telemedicine database organizations are of central criticalness to owed structures. Data fragmentation, database Websites clustering and intelligent data distribution are the three fold approaches that are being used in WTDS. These approaches reduce the data cost, improves response time and throughput.

Index Terms— Web telemedicine database systems (WTDS), Database fragmentation, Data distribution, Data allocation, Clustering.

I. INTRODUCTION

Designing of distributed database is related to fragmentation, allocation, replication, and query processing. An integrated methodology for fragmentation and allocation incorporates concurrency control costs. Data is distributed across many sites to fulfill objectives like response time and storage space. All these procedures are combined into a single step of distribution to apply to a practical problem [1]. To apply horizontal and vertical fragmentation simultaneously, a process of mixed fragmentation is used. It is used to process queries that would access horizontal and vertical fragmentation optimally. Different schemes are applied together to form a grid consisting of cells which are then merged to form mixed fragments to have less number of disc accesses to process distributed transactions [2].

One more important aspect in distributed database systems is clustering. It is used as one of the major steps in data analysis. Pattern clustering methods are used to provide useful advice and references which would be accessible to community of clustering practitioners to provide cross cutting schemes[3]. In clustering, basically, groups are discovered and interesting patterns and distributions in data sets are identified. Availability of huge experimental and transactional data sets have created needs for scaling clustering algorithms in different domains. Validating the clustering schemes applied is necessary for inherent features of data sets [4]. Fragment allocation is one of the performance parameters of distributed database systems. Heuristic algorithms lead to find nearly optimal allocation to have as much minimum communication cost as possible [5]. Due to the wide spreading of interpretation skills of medical specialists, it is difficult to deliver fast and appropriate report. New cloud and pervasive computing techniques are developed to enable the ECG to be broadcasted and understood via mobile phones [6].

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II. RELATED WORK

In [1] A. Tamhanka et.al have proposed an integrated methodology which is used for fragmentation and allocation process that is easy and applicable to real life problems. Issues related to storage space, and response time are solved by optimally distributing data across multiple sites. Fragmentation, Allocation and Replication are applied as a single step at every stage instead of dealing with each issue separately. However getting an optimal solution using this integrated model becomes difficult because of the complexity of problem dealing with fragmentation and allocation.

Shamkant B. Navathe et.al in [2] have applied horizontal and vertical fragmentation simultaneously on a relation. The process is performed by using vertical fragmentation followed by horizontal fragmentation and vice-versa. Mixed fragmentation is needed in distributed database to process transactions that would make use of these schemes optimally. The cells in grid formed by using these schemes together are used to form mixed fragments to have less communication cost. Designing easy user interface to collect distribution requirements in driving mixed fragmentation technique is the issue to be yet addressed.

In [3] M. N Murty et.al give an overview of unsupervised clustering techniques. Clustering is generally is used as one of the steps in data analysis. However differences in contextual knowledge of several communities has made the transfer of efficient methods and concepts slow to occur. Pattern clustering methods provide useful references and advice to clustering practitioners. Clustering involves portioning of same set of data items differently for different applications. Clustering becomes difficult because of this subjectivity. Using a large collection of measurements directly in clustering is not advisable due to high computational costs. M. Halkidi et.al in [4] have given a view of clustering where identifying interesting patterns in data sets and discovering groups is of much importance. Data mining requirements and presence of huge experimental and transactional data sets lead to discovery of efficient clustering algorithms for various domains. Being unsupervised, clustering algorithm is unable

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to specify actual number of clusters in advance. Therefore clustering schemes are validated for inherent features of data sets .There is no well established method to define and elaborate structure of arbitrary shaped clusters.

In [5] Y. Huang et.al throw light on fragment allocation which is concerned with performance measures of distributed database systems. A model reflecting query behavior in distributed database is proposed to have nearly optimal fragment allocation algorithm in terms of communication cost. However, the algorithm to find optimal allocation may not be efficient in terms of throughput. Fragments involved in transaction cannot be independent at all the time in real world.

In [6] J. –C Hsieh et.al show the great spreading of the interpretation skills of the medical specialists and 12-Lead ECG instruments, it remains a threat to deliver a quick, fast and appropriate report from the senior cardiologists with their appropriate decision making support. To realize ubiquitous 12-lead ECG Telediagnosis the authors created a new cloud and pervasive computing based 12-lead Electro Cardio Graphy (ECG). The service that is developed enables the ECG to be broadcasted and understood via mobile phones. That is when the patients are in hospitals or in ambulance they can access the service through any clinical websites that are created. To provide clinicians with easy ECG management the different data formats can be integrated in Picture Archiving and Communication System (PACS). However cloud application on data retrieval from PACS has not been realized because most hospitals do not allow remote clinicians to retrieve data from PACS.

III. Conclusion

The approach in A. Tamhanka et.al [1] has clearly reflected the interdependence between fragmentation and allocation approval. However, getting an optimal solution using this approach is complex in terms of local cache and query optimization. B. Navathe et.al [2] resolves this issue presenting mixed fragmentation to have less communication cost. In M. N Murty et.al [3] with regards of clustering being a challenging problem has lead to high computational costs of clustering of large data sets. Research article M. Halkidi et.al [4] discovers efficient clustering algorithms to overcome this issue. Performance of distributed database systems rely on allocating techniques. Survey of Y. Huang et.al [5] has lead us to optimal allocation algorithms to have minimum communication cost however decreasing the throughput of the system.

So we conclude that this research may be beneficial for superior Web-based Telemedicine Database System (WTDS) including faster response time, maximum scalability, performance and security.

References

1. Tamhanka and S. Ram, “Database Fragmentation and Allocation: An Integrated Methodology and Case Study,” IEEE Trans. Systems, Man and Cybernetics, Part A: Systems and Humans, vol. 28, no. 3, pp. 288-305, May 1998.
2. S. Navathe, K. Karlapalem, and R. Minyoung, “A Mixed Fragmentation Methodology for Initial Distributed Database Design,” J. Computer and Software Eng., vol. 3, no. 4, pp. 395-425, 1995.
3. Jain, M. Murty, and P. Flynn, “Data Clustering: A Review,” ACM Computing Surveys, vol. 31, no. 3, pp. 264-323, 1999.
4. M. Halkidi, Y. Batistakis, and M. Vazirgiannis, “Clustering Algorithms and Validity Measures,” Proc. 13th Int’l Conf. Scientific and Statistical Database Management (SSDBM), 2001.
5. Y. Huang and J. Chen, “Fragment Allocation in Distributed Database Design,” J. Information Science and Eng., vol. 17, pp. 491-506, 2001.
6. J.-C. Hsieh and M.-W. Hsu, “A Cloud Computing Based 12-Lead ECG Telemedicine Service,” BMC Medical Informatics and Decision Making, vol. 12, pp. 12-77, 2012.

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