



# Design A Web Based Service to Promite Telemedicine Management System

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## **ABSTRACT:**

Many web computing systems are running real time database services where their information change continuously and expand incrementally. In this context, web data services have a major role and draw significant improvements in monitoring and controlling the information truthfulness and data propagation. Currently, web telemedicine database services are of central importance to distributed systems. However, the increasing complexity and the rapid growth of the real world healthcare challenging applications make it hard to induce the database administrative staff. In this paper, we build an integrated web data services that satisfy fast response time for large scale Tele-health database management systems. Our focus will be on database management with application scenarios in dynamic telemedicine systems to increase care admissions and decrease care difficulties such as distance, travel, and time limitations. We propose three-fold approach based on data fragmentation,

database websites clustering and intelligent data distribution. This approach reduces the amount of data migrated between websites during applications' execution; achieves cost effective communications during applications' processing and improves applications' response time and throughput. The proposed approach is validated internally by measuring the impact of using our computing services' techniques on various performance features like communications cost, response time, and throughput. The external validation is achieved by comparing the performance of our approach to that of other techniques in the literature. The results show that our integrated approach significantly improves the performance of web database systems and outperforms its counterparts.

## **INTRODUCTION**

THE rapid growth and continuous change of the real world software applications have provoked researchers to propose several computing services' techniques to achieve more efficient and effective management of



web telemedicine database systems (WTDS). Significant research progress has been made in the past few years to improve WTDS performance. In particular, databases as a critical component of these systems have attracted many researchers. The web plays an important role in enabling healthcare services like telemedicine to serve inaccessible areas where there are few medical resources. It offers an easy and global access to patients' data without having to interact with them in person and it provides fast channels to consult specialists in emergency situations. Different kinds of patient's information such as ECG, temperature, and heart rate need to be accessed by means of various client devices in heterogeneous communications environments. WTDS enable high quality continuous delivery of patient's information wherever and whenever needed. Several benefits can be achieved by using web telemedicine services including: medical consultation delivery, transportation cost savings, data storage savings, and mobile applications support that overcome obstacles related to the performance (e.g., bandwidth, battery life, and storage), security (e.g., privacy, and reliability), and environment (e.g., scalability, heterogeneity, and

availability). The objectives of such services are to: (i) develop large applications that scale as the scope and workload increases, (ii) achieve precise control and monitoring on medical data to generate high telemedicine database system performance, (iii) provide large data archive of medical data records, accurate decision support systems, and trusted event-based notifications in typical clinical centers. In this work, we address the previous drawbacks and propose a three-fold approach that manages the computing web services that are required to promote telemedicine database system performance. The main contributions are: \_ Develop a fragmentation computing service technique by splitting telemedicine database relations into small disjoint fragments. This technique generates the minimum number of disjoint fragments that would be allocated to the web servers in the data distribution phase. This in turn reduces the data transferred and accessed through different websites and accordingly reduces the communications cost. \_ Introduce a high speed clustering service technique that groups the web telemedicine database sites into sets of clusters according to their communications



cost. This helps in grouping the websites that are more suitable to be in one cluster to minimize data allocation operations, which in turn helps to avoid allocating redundant data.

### **RELATED WORK**

Many research works have attempted to improve the performance of distributed database systems. These works have mostly investigated fragmentation, allocation and sometimes clustering problems. In this section, we present the main contributions related to these problems, discuss and compare their contributions with our proposed solutions.

### **TELEMEDICINE IFCA ASSUMPTIONS AND DEFINITIONS**

Incorporating database fragmentation, web database sites' clustering, and data fragments computing services' allocation techniques in one scenario distinguishes our approach from other approaches. The functionality of such approach depends on the settings, assumptions, and definitions that identify the WTDS implementation environment, to guarantee its efficiency and continuity. Fragmentation Computing Service To control the process of database fragmentation and maintain data consistency, the fragmentation technique

partitions each database relation into data set records that guarantee data inclusion, integration and non-overlapping. In a WTDS, neither complete relation nor attributes are suitable data units for distribution, especially when considering very large data. Therefore, it is appropriate to use data fragments that would be allocated to the WTDS sites. Data fragmentation is based on the data records generated by executing the telemedicine SQL queries on the database relations. The fragmentation process goes through two consecutive internal processes: (i) Overlapped and redundant data records fragmentation and (ii) Non-overlapped data records fragmentation.

### **CONCLUSION**

In this work, we proposed a new approach to promote WTDS performance. Our approach integrates three enhanced computing services' techniques namely, database fragmentation, network sites clustering and fragments allocation. We develop these techniques to solve technical challenges, like distributing data fragments among multiple web servers, handling failures, and making tradeoff between data availability and consistency. We propose an estimation model to compute communications cost



which helps in finding cost-effective data allocation solutions. The novelty of our approach lies in the integration of web database sites clustering as a new component of the process of WTDS design in order to improve performance and satisfy a certain level of quality in web services.

We perform both external and internal evaluation of our integrated approach. In the internal evaluation, we measure the impact of using our techniques on WTDS and web service performance measures like communications cost, response time and throughput. In the external evaluation, we compare the performance of our approach to that of other techniques in the literature. The results show that our integrated approach significantly improves services requirement satisfaction in web systems. This conclusion requires more investigation and experiments. Therefore, as future work we plan to investigate our approach on larger scale networks involving large number of sites over the cloud. We will consider applying different types of clustering and introduce search based technique to perform more intelligent data redistribution. Finally, we intend to introduce security concerns that need to be addressed over data fragments.

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