Privacy Protection and Intrusion Avoidance for Cloudlet-based Medical Data Sharing

ABSTRACT

With the popularity of wearable devices, along with the development of clouds and cloudlet technology, there has been increasing need to provide better medical care. The processing chain of medical data mainly includes data collection, data storage and data sharing, etc. Traditional healthcare system often requires the delivery of medical data to the cloud, which involves users’ sensitive information and causes communication energy consumption. Practically, medical data sharing is a critical and challenging issue. Thus in this paper, we build up a novel healthcare system by utilizing the flexibility of cloudlet. The functions of cloudlet include privacy protection, data sharing and intrusion detection. In the stage of data collection, we first utilize Number Theory Research Unit (NTRU) method to encrypt user’s body data collected by wearable devices. Those data will be transmitted to nearby cloudlet in an energy efficient fashion. Secondly, we present a new trust model to help users to select trustable partners who want to share stored data in the cloudlet. The trust model also helps similar patients to communicate with each other about their diseases. Thirdly, we divide users’ medical data stored in remote cloud of hospital into three parts, and give them proper protection. Finally, in order to protect the healthcare system from malicious attacks, we develop a novel collaborative intrusion detection system (IDS) method based on cloudlet mesh, which can effectively prevent the remote healthcare big data cloud from attacks. Our experiments demonstrate the effectiveness of the proposed scheme.

**EXISTING SYSTEM**

* In the existing system, In Cao et al. [11], an MRSE (multi keyword ranked search over encrypted data in cloud computing) privacy protection system was presented, which aims to provide users with a multi-keyword method for the cloud’s encrypted data. Although this method can provide result ranking, in which people are interested, the amount of calculation could be cumbersome.
* In Zhang et al. [24], a priority based health data aggregation (PHDA) scheme was presented to protect and aggregate different types of healthcare date in cloud assisted wireless boby area network (WBANs). The article in the existing system investigates security and privacy issues in mobile healthcare networks, including the privacy-protection for healthcare data aggregation, the security for data processing and misbehavior.
* The system describes a flexible security model especially for data centric applications in cloud computing based scenario to make sure data confidentiality, data integrity and fine grained access control to the application data. The system gives a systematic literature review of privacy-protection in cloud-assisted healthcare system.

**Disadvantages**

* There is less security on outsourced data due to lack of collaborative intrusion detection system (IDS).
* There is no Remote cloud data privacy protection Scheme.

**PROPOSED SYSTEM**

* The proposed system, a cloudlet based healthcare system is presented, where the privacy of users’ physiological data and the efficiency of data transmissions are our main concern. The system uses NTRU for data protection during data transmissions to the cloudlet.
* In order to share data in the cloudlet, we use users’ similarity and reputation to build up trust model. Based on the measured users’ trust level, the system determines whether data sharing is performed.
* The proposed system divides data in remote cloud into different kinds and utilizes encryption mechanism to protect them respectively.
* The Proposed system proposes collaborative IDS based on cloudlet mesh to protect the whole healthcare system against malicious attacks.

**Advantages**

* The security is more due to Collaboration Intrusion and Detection system.
* Implemented Cloudlet based data sharing which will give more security on outsourced cloud data.

**SYSTEM REQUIREMENTS**

➢ **H/W System Configuration:-**

➢ Processor - Pentium –IV

➢ RAM - 4 GB (min)

➢ Hard Disk - 20 GB

➢ Key Board - Standard Windows Keyboard

➢ Mouse - Two or Three Button Mouse

➢ Monitor - SVGA

**Software Requirements:**

* Operating System - Windows XP
* Coding Language - Java/J2EE(JSP,Servlet)
* Front End - J2EE
* Back End - MySQL