RESEARCH PAPER

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Healthcare electronic record transaction security improvement on java swing performance prediction in data mining techniques

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Data mining knowledge discovery techniques process of employing one or more machine learning techniques to automatically analysis and extract the knowledge from large database. Data mining explore action and analysis of large quantities of data in order to discover meaningful patterns and rules. ICT (Information Communication and Technology) reached all level in human being, but healthcare and pharmaceutical organization till they have patient of attributes, diseases of various sysmptoms, past history, and feature treatment of forecasting information of large database store and forwarding to retrievals through computer software necessary to healthcare relevant all organization. Electronic health record (EHR) system for necessary and high-quality patient treatment. Cautious design of delegation mechanism must be in place as a building block of various hospital cooperation, since the cooperation inevitably involves exchanging and sharing relevant patient data that are considered highly private and confidential. The delegation mechanism grants permission and restricts access rights of a cooperating partner. Patients are unwilling to accept the EHR system unless their health data are guaranteed proper use and disclosure, which cannot be easily achieved without different transaction of domain like various hospital respect to authentication and fine-grained access control. In addition, revocation of the delegate rights should be possible at any time during the cooperation. In this paper, we propose a secure EHR system, based on cryptographic constructions, to enable secure sharing of sensitive patient data during cooperation and preserve patient data privacy. Our EHR system further incorporates advanced mechanisms for fine-grained access control, and on-demand revocation, as enhancements to the basic access control offered by the delegation mechanism, and the basic revocation mechanism, respectively EHR system is demonstrated to fulfill objectives specific to the online transaction, encryption and decryption methods performance predict the data mining decision tree and clustering techniques.

Key words : Patient electronic health record, Encryption, Decryption, Java swing, Decision tree data mining.

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INTRODUCTION

Patient electronic health record (PEHR) systems are used in place of paper systems to increase physician efficiency, reduce costs (e.g., storage), medical errors, improve data availability and sharing etc. Records stored in a central server of a healthcare provider and exchanged over the internet for cross-organizational sharing are subject to theft and security breaches. The majority of works on PEHR systems relevant to handling private patient data still concentrate on the framework design or solution proposals without technical realization. Rawback in existing system a central issue around the sharing of sensitive patient data is the delegation, verification, revocation of permissions and access rights with respect to an outside healthcare provider proposed system to design an EHR system that enables data sharing across collaborating healthcare providers and simultaneously protects patients' health data privacy. While the basic delegation and revocation should be sufficient for common cases, we design additional mechanisms to satisfy more delicate and stringent control requirements tailored for

the EHR system of interest. Specifically, in addition to the basic access control achieved by delegation, fine-grained access control based on searchable public key encryption (PKE) technique guarantees minimum necessary data access and distributed data storage. On demand revocation based on dynamic accumulators gives rise to revoking any delegate at any time, with minimal update and maintenance costs incurred at the delegator.

Now, healthcare management transaction system (HMTS) expected information Technology and communication (ICT) based patient information of medical records complete transaction in internet with confidentially. The most healthcare datasets are full of missing values and data mining has a wide use in the healthcare domain in areas such as diagnosis, patient management (Liu, *et al.,* 2006) propose some new operations for the data security which is the encryption and decryption (cryptographic constructions) technique while sharing the data between the clinics or hospitals and furthermore we do the delegation mechanism in the distributed clients to avoid the abuse of patient data. The delegation mechanism will be applied when the absents of the authenticated person in the authorized clinics or hospitals. EIS (Exchange interface server) in various hospital management of transaction reduces costs from duplicates examination (Huang and Liou, 2007). Online transaction domain a web-specific term that refers to a situation where content comes from different web servers, or where content from one server interacts invisibly with another server that belongs to someone else delegation or deputation is the assignment of authority and responsibility to another person (normally from a manager to a subordinate) to carry out specific activities. Privacy (from Latin *privatus* 'separated from the rest, deprived of something, participation in the government', from *privo* 'to deprive') is the ability of an individual or group to seclude themselves or information about themselves and thereby reveal themselves selectively. Key management system issues in mining healthcare databases which patient hospital days are the benefits of nursing care and view the data reviewed in this 77 per cent of hospital days were predictable of patient problems interventions (Kraft and Desouza, 2002). Electronic health record security transaction an electronic health record (EHR) (also electronic patient record (EPR) or computerized patient record) is an evolving concept defined as a systematic collection of electronic health information about individual patients or populations.The distributed model uses the health insurance electronic format of transaction of IC card to record of visited hospital while using minimum computer and network resource in the transmission of EMR system useful to healthcare resources place (Huang and Liou 2007). It is a record in digital format that is capable of being shared across different health care settings, by being embedded in network-connected enterprise-wide information systems. Such records may include a whole range of data in comprehensive or summary form, including demographics, medical history, medication and allergies, immunization status, laboratory test results, radiology images, and billing information. A cryptographic key management system solution for privacy and security regulations (Lee and Lee, 2008).

Java swing:

Java is simple powerful designed to be easy for professional programmer to learn and use efficiently. Java for programming on the internet and incorporates object–oriented programming concepts and is platform independent. Java swing component facilitate efficient graphical user interface (GUI) development. Java foundation classes (JFC) an improved user interface called the Java swing components like as swing, pluggable look and feel, drag and drop, accessibility, 2D allows various platforms.

Data mining decision tree and OLAP:

Data mining knowledge discovery in databases and extraction of interesting (non-trivial, implicit, previously unknown and potentially useful) information or patterns from data in large databases. Alternative names and their " inside stories" data mining knowledge discovery mining in databases (KDD), knowledge extraction, data or pattern analysis, data archeology, business intelligence, etc. Decision trees algorithm calculates the odds of an outcome based on values in a training set. Decision tree algorithms is a classification and regression algorithms provide by SQL server analysis services for use in predictive modeling of both discrete and continuous attributes and it supports the use of OLAP mining models and the creation of data mining dimensions. LAP is deductive process where the analyst generates a series of hypothetical patterns or trends and by performing queries verifies these patterns and data mining OLAP inductive process more efficient and accurate various database knowledge discovery.

Encryption and decryption public key:

Public key encryption uses two different keys, one private and one public. The keys are mathematically related so that data encrypted with one key can be

decrypted using only the other key. Message integrity ability to be certain that the message being sent arrives at the proper destination without being copied or changed.

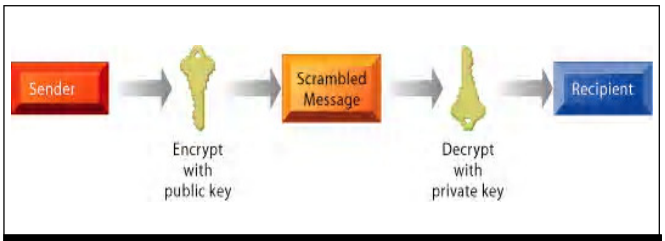

Fig. 1: Public key infrastructure (PKI): Use of public key cryptography working with a certificate authority

Objective:

Develop the healthcare electronic record of transaction security system of performance analysis on decision tree data mining techniques using encryption and decryption concept on JAVA swing.

RESEARCH METHODOLOGY

Electronic health record (EHR) systems are used in place of paper systems to increase physician efficiency, reduce costs (e.g., storage), medical errors, improve data availability and sharing etc. Records stored in a central server of a healthcare provider and exchanged over the internet for cross-organizational sharing are subject to theft and security breaches. The majority of works on EHR systems relevant to handling private patient data still concentrate on the framework design (fig. 2).

Study of design:

Hospital patient information of electronic healthcare records confidentially client and public storage server authentication based transaction to other hospital with encryption and decryption techniques improvement on Java swing performance prediction in decision tree data mining techniques.

Data collection:

Patient electronic healthcare records computerized information of data collected from Sree Renga Hospital, Chengalpattu, Tamilnadu. Here various patient attributes, patient past medical histroy, current problems, symptoms of illness, Duration of symptoms and Doctor fees details taking to encryption and decryption transaction performance prediction in data mining.

Encryption and decryption algorithms:

Encryption algorithm, E_k, decryption algorithms, D_k, are invertible transformations on the plaintext M, or the cipertext C, defined by the key K, that is for each K and M, $C = E_k(M)$, $M = D_k(C) = D_k\{E_k(M)\}$, for each k , D_k and E_k are easy to computation, For each computation of D_k from E_k is computationally intractable.

- Each user chooses his own value of 'n' and another pair of positive integers (e,d), and n=pq, $\Phi(n)$ = (p1) (q 1), gcd [$\Phi(n)$,d] = 1, e and d modulo-$\Phi(n)$ = 1,and p,q are prime numbers.
- The user places his encryption key the number pair (n,e) in the public directory.
- The decryption key consists of the number pair (n,d) of which 'd' is kept secret.
- Messages are first represented as integers in the range (0, n-1)
- Encryption: $M = D(C) = (C)^d$ modulo-n
  Decryption: $C = E(M) = (M)^e$ modulo-n

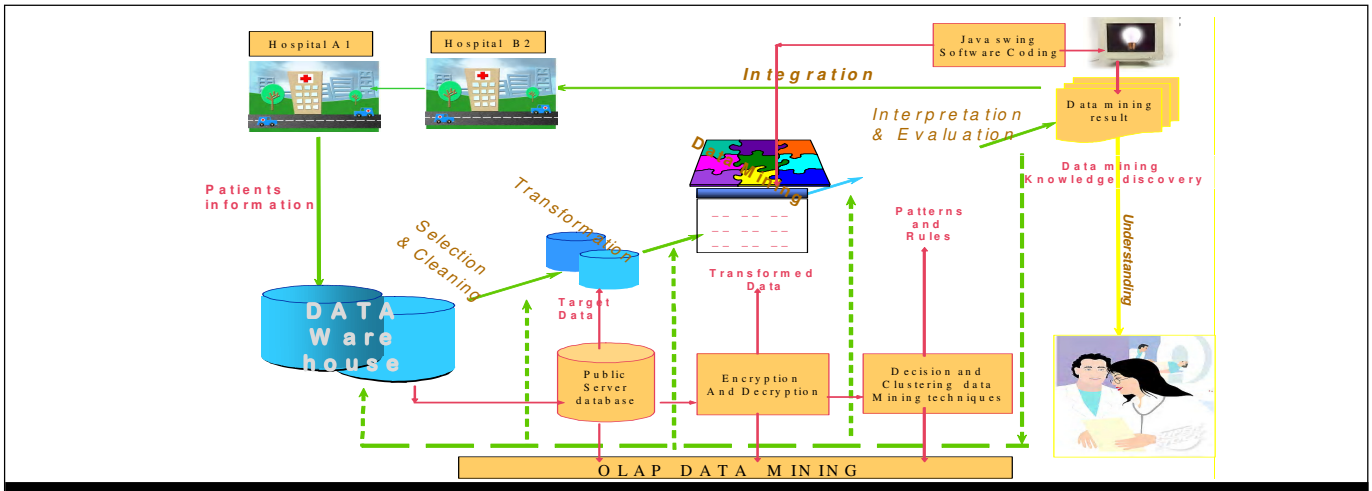

Fig. 2 : Various hospital patient electronic healthcare records knowledge discovery process

Decision tree algorithm:

- Create a node N;
- If samples are all of the same class C then return N as a leaf node labeled with the class C;
- If attribute – list is empty then return 'n' as a leaf node labeled with the most common class in samples;
- Select test – attributes, the attributes among attributes- list with the highest information gain;
- Label node N with test – attribute, for each known value a_i of test –attribute; Next,
- Grow a branch from node N for the condition test-attributes = a_i;
- Let s_i be the set of sample in sample for which test-attributes = a_i ;
- If s_i is empty then attach a leaf labeled with most common class in sample;
- Else attach the node returned by generate decision tree (s_i, attributes list test attributes);

Analysis :

Java swing software coding is efficiency of encryption and decryption transaction and store and forward analysis on data mining decision tree concept based various hospital patient information transferred with confidentially. Java swing components are java bean compliant and allows components to be used easily in a bean aware application building program. This root of the majority of the swing hierarchy is the J Component class. This class is an extension of the AWT Container class. Swing components comprise of large percentage of the JFC release. Swing consists of user interface (UI) classes and non –user interface classes. The non – user interface classes provide services and other operations for the UI classes. Class function diagram showing the data mining decision tree knowledge discovery analysis the performance of encryption and decryption transaction on public storage server how data are storing and that data forwarding various hospital like B Client 2 confidentially. This security system based hospital A which has two logins one for first doctor and for next doctor. The first doctor delegator can access send and receive the whole PHER of patient and doctor might provide the access responsibilities to the next doctor delegate incase of his absence, the next doctor can access he PHER with on demand revocation this is called roll based delegation and this Client 1 stores the HER after the updating of PHER and after finishing treatment and it sends the updated HER to server in encrypted format. Healthcare electronic record transaction security complete a central issue around the sharing of sensitive patient data is the delegation, verification, revocation of permissions and access right with respect to an outside healthcare provider clearly understanding PEHR information.

RESULTS AND ANALYSIS

Patient electronic healthcare records PEHR data is transferred in encryption and decryption methods to improving storage and forwarding to different hospital sharing PEHR maintain the minimum privilege delegation, adaptability, access control and on demand revocation successfully implemented. Java swing user interface design of JFC java foundation class, GUI graphical user interface and data mining knowledge discovery of data mining techniques is powerful software to various healthcare organization for large database maintain purpose. This computer design an PEHR system that enables data sharing across collaborating healthcare providers and simultaneously protects patients health data privacy of our delegation

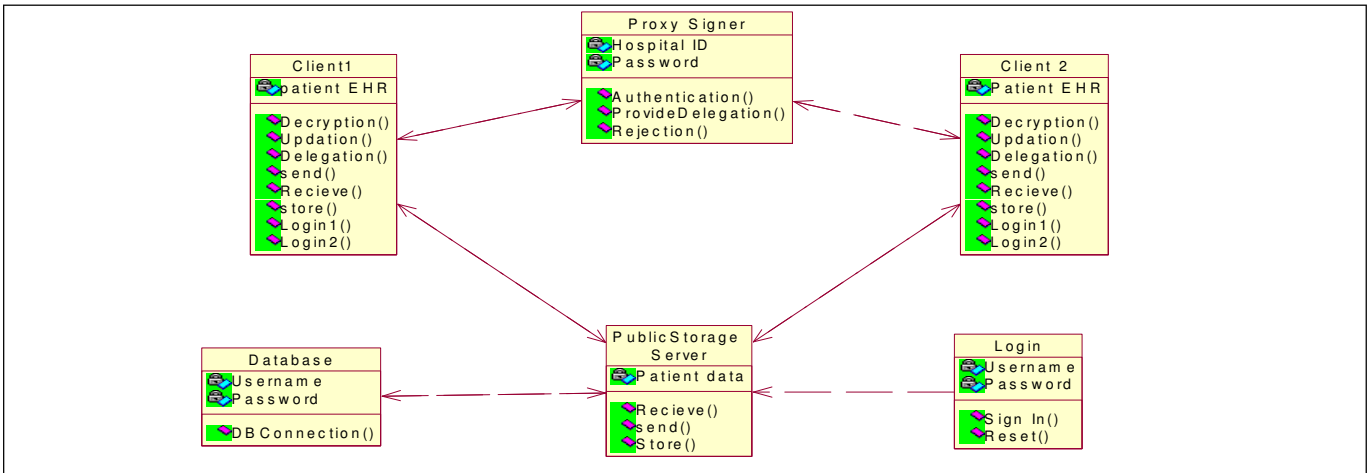

Fig. 3: Software class function diagram

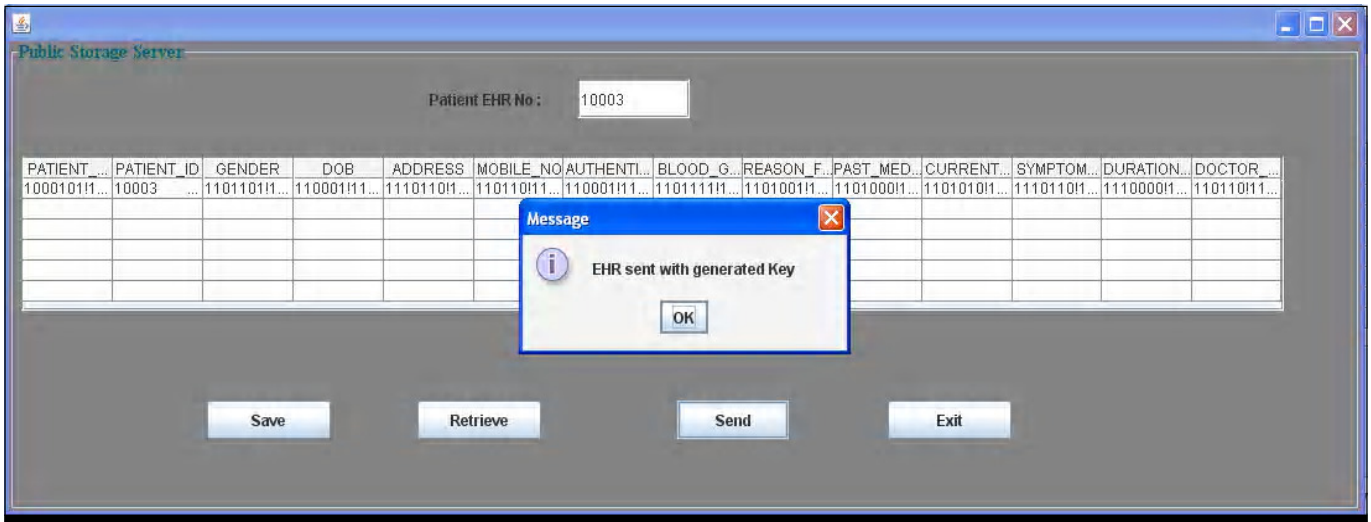

Fig. 4: Show the public storage server encryption and decryption function

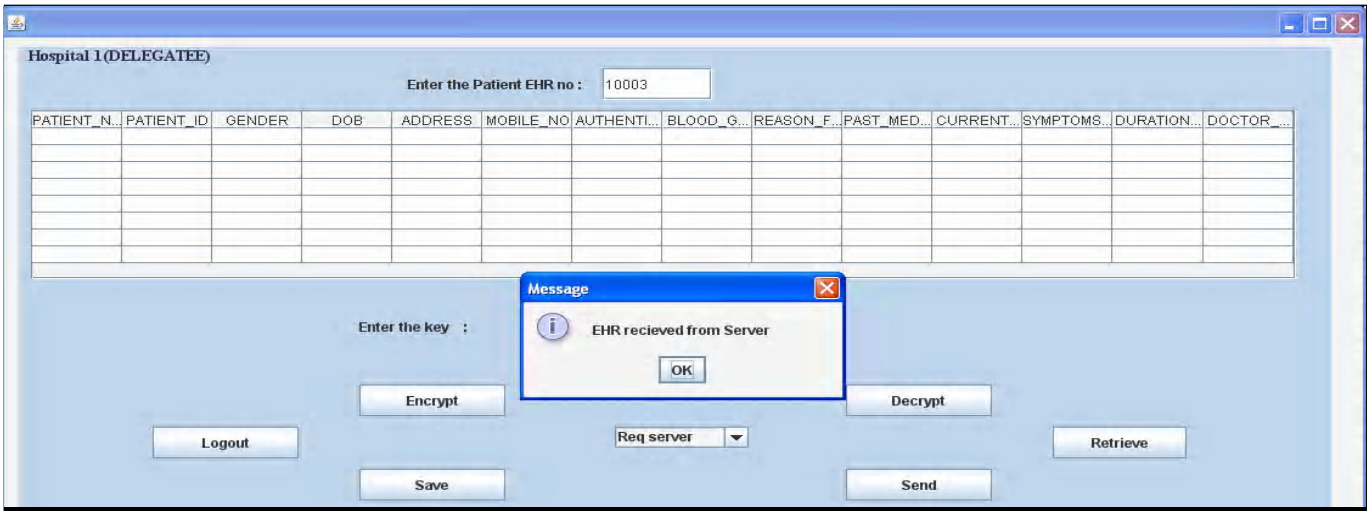

Fig. 5: Show the patient electronic healthcare records receeiving from server

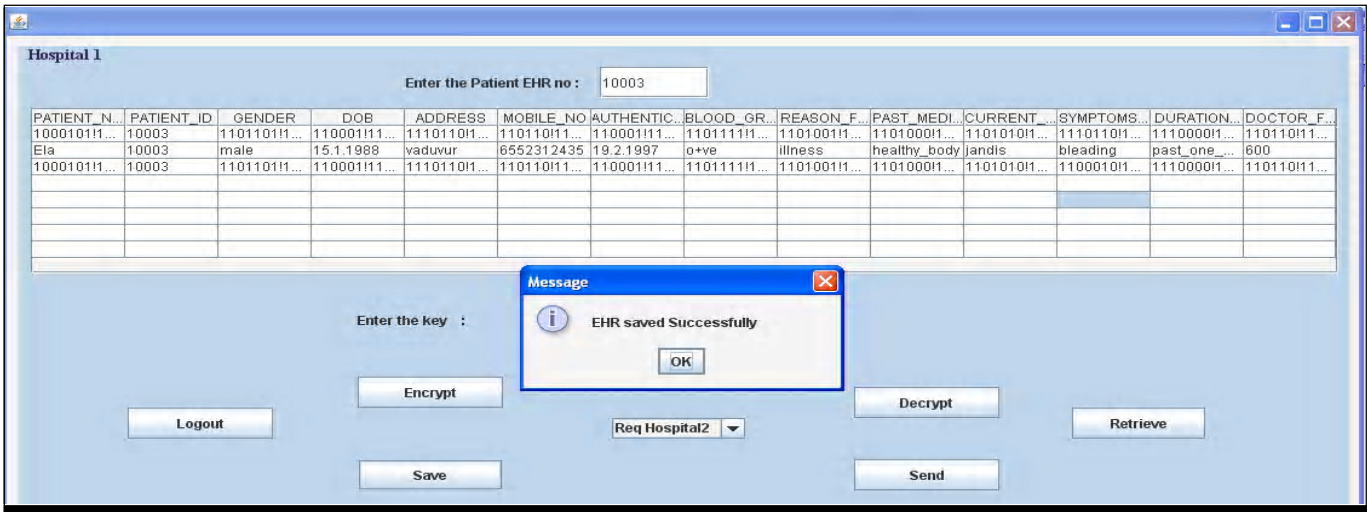

Fig. 6: Show the successfully encryption and decryption transaction of PEHR

procedure is both role based and proxy signature based with the former yielding dynamics in the face of delegates status availability changes and latter providing a secure avenue for basic delegation and revocation will improvement on public storage server. (Fig. 4 - 6).

Health care data mining information rich industry, warehousing large amount of medical data and healthcare industry finds it through to manage and properly utilized the huge medical data collected through different medical process stored data collection is an asset for healthcare organization if properly utilized. Electronic medical records need for technical solutions for maintaining the privacy of HER (Ray and Wimalasiri, 2006). The health care industry globally is facing the challenge of expoenetially increasing costs (Wickramasinghe, 2002). The healthcare data mining helps you to improve the healthcare standards. The data mining technology helps healthcare organization to achieve various business research objectives such as low costs and increase revenue generation while maining high quality healthcare. ICT has a large potential to be useful in healthcare sharing of patient records among different healthcare hospital organization. Data mining tools help medical industry to effectively use the stored healthcare data need to protect the misuse of healthcare data. Some time in hospital misusing happening on patient diseases treatment certain information so this very encryption and decryption transaction necessary to healthcare accessed by the right authorized persons or doctor only. Basically delegation and revocation should be sufficient for common cases, we design additional mechanisms to satisfy more delicate and stringent control requirements tailored for the PEHR system of interest. Specifically in addition to the basic access control achieved by delegation, fine gained access control based on searchable public key encryption PEKS technique guarantees minimum necessary data access and distributed data storage. On demand revocation based on dynamic accumulators gives rise to revoking any delegate at any time, with minimal update and maintenance costs incurred at the delegator. This public storage server encryption and decryption application techniques very useful to avoid misusing patient real health information security and confidentially sharing different hospital or according to certain persons. This transaction performance analysis on data mining decision tree efficiency of result showing with hospital organization.

Conclusion:

This research method of design, a secure and functional PEHR system is to support patient data sharing and cooperative other hospital organizations at same time preserve patient data privacy. Java swing, Sql server and data mining decision tree used for exploration data base predictive analysis. Encryption and decryption transaction of security system and data mining knowledge discovery of decision tree techniques is a set play an important role in tackling the data overload in medical informatics and benefits include improved health care quality in our soceity. This system reduced operating costs, misuse, corruption and hacking totally avoiding on patient treatment of healthcare records keeping with confidentially. Future direction, tele medicine treatment of patient healthcare records functioning on cryptography computer based training and evaluation various hospital of improve the communication system.

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