

基于区块链的电子病历系统的设计与实现

外文题目 Design and Implementation of
Electronic Medical
Record System Based on
Block Chain

摘要

在当今医疗行业发展迅速，据国家统计局统计 2016 年至今国内医疗卫生机构单位共有 983394 个，其中医院机构数量 29140 个，同比增长 5.6%。医院数量比 2012 年增加 5970 个，五年度复合增长 5.9%。其中医疗数据更是呈现爆炸式的增长。而在现在大数据时代，数据则变成了一种十分重要的数据资产。

在医疗病历管理系统中，病人的记录（包括处方、化验单、病理结果、核磁共振图像）都是十分珍贵的数据资产，若能够为医生、护理人员和研究者创建一个共享的统一的数据系统，提供及时、准确和广泛的病人医疗数据，并实现跨多机构的数据共享，则可以帮助医院医护人员定制的治疗方案，让病人可以随时知道自己的就诊足迹，并为研究人员提供宽泛的数据源以研究疾病，加速生物医药科技的发展，然而，有很多因素制约了病人医疗记录的共享于数据流通，例如电子医疗记录的普及程度在各大县乡镇级医疗单位还不高够，大多数医疗机构还是采用纸质医疗记录，医疗记录格式不统一，不兼容，无法实现安全跨机构的网络共享，最主要还是涉及到医疗记录的安全和隐私问题。

随着基于比特币的区块链技术得到了宽泛的讨论和运用，区块链作为一个分布式可验证的公共账本、具备分布式、可去信第三方、开放性、去中心化等特性，可以作为构建共享的医疗病历系统的基础计算机结构，本项目针对医疗记录共享过程中存在的安全和隐私问题，结合区块链和 merkle DAG，提出一个分布式的个人医疗记录安全存储和共享系统设计，在该系统设计中，医疗数据由患者所有，其使用权限也由患者控制，患者既可以共享他们的医疗记录给医院和科研机构，也有能力撤销其权限，有效的实现了医疗记录的安全存储和有效使用。

整个过程使用 IntelliJ IDEA 作为开发工具，引用了 Spring boot, t-io 等开源框架，用 mysql，以及 rocksDB 作为本地数据库。

关键词：病历共享，区块链，分布式存储

Abstract

Nowadays, the medical industry is developing rapidly. According to the statistics of the National Bureau of Statistics, there are 98,3394 medical and health institutions in China from 2016 to now, including 29,140 hospitals, an increase of 5.6% over the same period last year. The number of hospitals increased by 5,970 compared with 2012, a compound increase of 5.9% in five years. Among them, medical information is showing explosive growth. In the era of big data, data has become a very important data asset.

In the medical record management system, patient records (including prescriptions, laboratory records, pathological results, nuclear magnetic resonance images) are valuable data assets. If we can create a shared data source for doctors, nurses and researchers, provide timely, accurate and extensive patient health data, and achieve cross-agency data sharing, we can help medical and nursing personnel customize the best. However, there are many factors that restrict the sharing of patient medical records, such as the popularity of electronic medical records is not high, most medical institutions still use paper medical records, the structure of medical records is not uniform, incompatible, and can not achieve cross-agency safety. Network sharing mainly involves the security and privacy of medical records.

With the widespread research and application of block chain technology based on Bitcoin, block chain, as a distributed and verifiable public account, has the characteristics of anonymity, distribution and trustworthy third party, can be used as the basis of building a viable computing platform. This project aims at the security and privacy problems in the process of sharing personal medical records, combining block chain and merkle DAG. A distributed scheme for safe storage and sharing of personal medical records is proposed. In this scheme, medical records are owned by individuals and their use rights are controlled by individuals. Individuals can share their medical records with hospitals and scientific research institutes, and also have the ability to revoke their rights, thus effectively realizing the safe storage and effective use of personal medical records.

The whole process uses IntelliJ IDEA as a development tool and refers to Spring boot, t-io.

Equivalent open source frameworks, using MySQL and rocksDB as local databases

Key Words: medical record sharing, block chain, distributed storage

以上内容仅为本文档的试下载部分，为可阅读页数的一半内容。如要下载或阅读全文，请访问：

<https://d.book118.com/335040013212012012>