

A Proposal to Tackle Security Challenges of Distributed Systems in the Healthcare Sector

Authors : Ang Chia Hong, Julian Khoo Xubin, Burra Venkata Durga Kumar

Abstract : Distributed systems offer many benefits to the healthcare industry. From big data analysis to business intelligence, the increased computational power and efficiency from distributed systems serve as an invaluable resource in the healthcare sector to utilize. However, as the usage of these distributed systems increases, many issues arise. The main focus of this paper will be on security issues. Many security issues stem from distributed systems in the healthcare industry, particularly information security. The data of people is especially sensitive in the healthcare industry. If important information gets leaked (Eg. IC, credit card number, address, etc.), a person's identity, financial status, and safety might get compromised. This results in the responsible organization losing a lot of money in compensating these people and even more resources expended trying to fix the fault. Therefore, a framework for a blockchain-based healthcare data management system for healthcare was proposed. In this framework, the usage of a blockchain network is explored to store the encryption key of the patient's data. As for the actual data, it is encrypted and its encrypted data, called ciphertext, is stored in a cloud storage platform. Furthermore, there are some issues that have to be emphasized and tackled for future improvements, such as a multi-user scheme that could be proposed, authentication issues that have to be tackled or migrating the backend processes into the blockchain network. Due to the nature of blockchain technology, the data will be tamper-proof, and its read-only function can only be accessed by authorized users such as doctors and nurses. This guarantees the confidentiality and immutability of the patient's data.

Keywords : distributed, healthcare, efficiency, security, blockchain, confidentiality and immutability

Conference Title : ICDSA 2022 : International Conference on Distributed Systems and Applications

Conference Location : Sydney, Australia

Conference Dates : January 28-29, 2022