ScienceTalk

Is S’pore’s healthcare sector ready for blockchain tech?

Once limitations are addressed, it could be a mainstay as industry strives to innovate

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Singapore is making steady progress in the healthcare digitalization journey. From telemedicine consultations and triaging robots to wearable devices for monitoring patients, many of these advances are being pushed to the next level with the integration of artificial intelligence (AI).

Recently, SingHealth embarked on a three-year partnership with SGInnovate, an organization that helps entrepreneurs and firms to build deep tech start-ups, to ramp up health sciences innovation.

Given the exponentially large amounts of data that will be generated with the growing use of AI, it is worth thinking about how it will be handled and protected.

Owing to the advances in financial technology and cryptography, blockchain technology has received increased interest and awareness. This coincides with the digital pivot to remote health situations globally as we combat the Covid-19 pandemic.

BLOCKCHAIN IN HEALTHCARE

Blockchain is a form of distributed ledger technology where transactions are recorded in blocks which are, in turn, linked together to form what is essentially a shared database.

When a new block is added to the blockchain, every computer on the network updates its blockchain to reflect the change. By spreading that information across a public ledger, blockchain becomes more difficult to tamper with.

Blockchain networks are increasingly transparent and secure, as well as traceability of data, which are key attributes needed by the healthcare sector.

To bring blockchain from bench to bedside, several challenges will need to be addressed. They include awareness and acceptance by all stakeholders, adaptation of cyber-security policies to allow data transfer, IT infrastructure investment and management, and interoperability standards.

In Singapore, the public healthcare sector recognises the need to innovate and adapt to new emerging digital technologies, in alignment with the Smart Nation Singapore initiative and Research, Innovation and Enterprise 2025 Plan.

SingHealth, too, is actively exploring the use of blockchain in healthcare and research applications.

Earlier this year, the Singapore National Eye Centre and Singa- pore Eye Research Institute published research on the use of blockchain in regulating data transfer, AI model testing and transferring results for a deep learning system in detecting high myopia and myopic macular degeneration.

This project is a collaboration with the Agency for Science, Technology and Research (A*Star) Institute of High Performance Computing and the Singapore University of Technology and Design in the Lancet Digital Health.

Data access and control are critical when it comes to research involving AI. For instance, retina datasets require protection of personal information.

In a review published in the Lancet Digital Health, the authors explore the regulatory and technical aspects of blockchain and its potential to provide secure access and distribution.

This requires the authenticity and security of sensitive and critical data and will result in the development of blockchain-based systems which will protect and validate data and assist in the management of personal information.

Blockchain also has applications in remote medical consultations, where doctors can consult patients and conduct virtual consultations.

In Singapore, for example, the Telemedicine and Telehealth Consortium, a partnership between healthcare providers, has been established to explore how blockchain technology can be used to improve the delivery of healthcare services.

Technology adoption is in its nascent stages in healthcare, and early adoption allows for a roadmap to develop technologies and capabilities for clinical and research applications.

The benefits of increased transparency and enhanced visibility by all parties, including patients, are enormous. However, there are also drawbacks to blockchain technology, such as the need for additional infrastructure investment, increased privacy concerns and the potential for a single point of failure.

To conclude, blockchain technology has the potential to revolutionize the healthcare sector, but it is important to address the challenges and limitations that come with its adoption.

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