

Blockchain Technology Applications in Patient Tracking Systems Regarding Privacy-Preserving Concerns and COVID-19 Pandemic

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Abstract : The COVID-19 pandemic has paralyzed many lives until a vaccine was available, which caused the so-called “new normal.” According to the World Health Organization (WHO), COVID-19 is an infectious disease. It can cause significant illness or death in anyone. Governments and health officials tried to impose rules and regulations to avoid and slow down transmission. Therefore, software engineers worldwide developed applications to trace and track patients’ movements and notify others, mainly using Bluetooth. In this way, everyone could be informed whether they come in close contact with someone who has COVID-19 and takes proper safety precautions. Because most of the applications use technologies that can potentially reveal the user’s identity and location, researchers have debated privacy preservation and how to improve user privacy during such pandemics. Thanks to Distributed Ledger Technology (DLT), there have been some proposed methods to develop privacy-preserving Patient Tracking Systems in the last two years. As an instance of the DLT, Blockchain is like a decentralized peer-to-peer database that maintains a record of transactions. Transactions are immutable, transparent, and anonymous in this system. We conducted a comprehensive evaluation of the literature by looking for papers in the relevant field and dividing them into pre- and post-pandemic systems. Additionally, we discussed the many uses of blockchain technology in pandemic control. We found that two major obstacles facing blockchain implementation across many healthcare systems are scalability and privacy. The Polkadot platform is presented, along with a review of its efficacy in tackling current concerns. A more scalable healthcare system is achievable in the near future using Polkadot as well as a much more privacy-preserving environment.

Keywords : blockchain, electronic record management, EHR, privacy-preserving, patient tracking, COVID-19, trust and confidence, Polkadot

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