

# IntelliMedChain: Knowledge Driven and Blockchain Powered Data Sharing Framework for Smart Healthcare

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## Abstract

The healthcare profile of an individual is scattered across multiple data sources which can be difficult to access in a timely fashion. Furthermore, while the need to secure an individual's personal health record is of paramount importance to prevent compromises such as cyber-attacks, it is important to be able to seamlessly and quickly share information across healthcare providers to further enable precision and personalized health care. We present IntelliMedChain, a blockchain-powered knowledge-driven data sharing framework that gives patients complete control of their medical data and which can extract rich information hidden in the medical records using knowledge graphs (KGs). By incorporating both blockchain and KGs, we can provide a platform for a secure data sharing amongst stakeholders by maintaining data privacy and integrity through data authentication and robust data integration. We conduct a pilot study of the IntelliMedChain network using Ethereum blockchain technology to share knowledge across stakeholders. We show how it mitigates the issues around scalability by efficiently managing large-scale data and interoperability through seamless adoption of data regulations, as prescribed by various regulatory bodies for efficient governance.

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