

# Demystifying Blockchains: Decentralized and Fault-tolerant Storage for the Future of Big Data?

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## Abstract

Bitcoin is a successful and interesting example of a global scale peer-to-peer cryptocurrency that integrates many techniques and protocols from cryptography, distributed systems, and databases. The main underlying data structure is blockchain, a scalable fully replicated structure that is shared among all participants and guarantees a consistent view of all user transactions by all participants in the cryptocurrency system. The novel aspect of Blockchain is that historical data about currency transactions is maintained in the absence of any central authority. This property of Blockchain has given rise to the possibility that the future applications will transition from centralized databases to a fully decentralized storage based on blockchains. In this talk, we start by developing an understanding of the basic protocols used in blockchain, and elaborate on its main advantages and limitations. To overcome these limitations, we provide the necessary distributed systems background in managing large scale fully replicated ledgers, using Byzantine Agreement protocols to solve the consensus problem. Finally, we expound on some of the most recent efforts to design scalable and efficient blockchains.

## Speaker Biography

Divy Agrawal is a Professor of Computer Science at the University of California at Santa Barbara. His research interests are in the areas of databases, distributed systems, cloud computing, and big data infrastructures and analysis. He is the Fellow of the ACM, the IEEE, and the AAAS. He serves as the Editor-in-Chief of Journal of Distributed and Parallel Databases and serves on the Editorial boards of ACM Transactions of Spatial Algorithms and Systems and ACM Books. He has published 400+ articles on databases and distributed systems and has supervised 35+ PhD students during his tenure at the University of California at Santa Barbara.

