香港科技大學
THE HONG KONG UNIVERSITY OF
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HKUST Big Data Institute (BDI)
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Data Science and Analytics Webinar Series 2021

State of Permissionless and Permissioned Blockchains: Myths and Reality

📅 **1 Feb 2021** (Mon)

🕐 **18:00 – 18:50** (HKT, UTC+08:00)

📍 **Online via Zoom**
(Link to be provided upon registration)

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Abstract

Since the concept of blockchain was invented as the underlying core data structure of the permissionless/public Bitcoin cryptocurrency network, several cryptocurrencies, and associated concepts like tokens and ICOs emerged. After much speculation and hype, significant number of them have become problematic or worthless, even though some countries have embraced them! The public blockchain system Ethereum emerged by generalizing the use of blockchains to manage any kind of asset, be it physical or purely digital, with the introduction of the concept of Smart Contracts. Over the years, numerous myths have developed with respect to the purported utility and the need for permissionless blockchains. The adoption and further adaptation of blockchains and smart contracts for use in the permissioned/private environments is what I consider to be useful and of practical consequence. Hence, the technical aspects of only private blockchain systems will be the focus of my talk.

IT companies like IBM, Intel, SAP, Huawei, Oracle, Baidu and AWS, and many key players in different vertical industry segments (e.g., Ant Financial) have recognized the applicability of blockchains in environments other than cryptocurrencies. There is a great deal of momentum behind Hyperledger Fabric throughout the world. Other private blockchain systems include Quorum, Hyperledger Sawtooth and R3 Corda. In this talk, I will describe some use-case scenarios, especially those in production deployment. I will also survey the landscape of private blockchain systems with respect to their architectures in general and their approaches to some specific technical areas. Along the way, I will bust many myths associated with permissionless blockchains. I will also compare traditional database technologies with blockchain systems' features and identify desirable future research topics. This is a highly revised version of a keynote delivered at ACM SIGMOD International Conference on Management of Data in Amsterdam in July 2019. The associated keynote paper is at http://bit.ly/sigBcP

About the speaker

Dr. C. Mohan is currently the Shaw Visiting Professor at the National University of Singapore (NUS). He is also a Distinguished Visiting Professor at Tsinghua University in China, a Consultant to Microsoft's Data Team, and an Advisor of the Kerala Blockchain Academy (KBA) and the Tamil Nadu e-Governance Agency (TNeGA) in India. He retired in June 2020 from being an IBM Fellow at the IBM Almaden Research Center in Silicon Valley. He was an IBM researcher for 38.5 years in the database, blockchain and related areas, impacting numerous IBM and non-IBM products, the research and academic communities, and standards, especially with his invention of the well-known ARIES family of database locking and recovery algorithms, and the Presumed Abort distributed commit protocol. This IBM (1997), ACM (2002) and IEEE (2002) Fellow has also served as the IBM India Chief Scientist (2006-2009). In addition to receiving the ACM SIGMOD Edgar F. Codd Innovations Award (1996), the VLDB 10 Year Best Paper Award (1999) and numerous IBM awards, Mohan was elected to the US and Indian National Academies of Engineering (2009) and named an IBM Master Inventor (1997). This Distinguished Alumnus of IIT Madras (1977) received his PhD at the University of Texas at Austin (1981). He is an inventor of 50 patents. During the last many years, he focused on Blockchain, Big Data and HTAP technologies (http://bit.ly/sigBcP, http://bit.ly/CMgMDS). Since 2017, he has been an evangelist of permissioned blockchains and the myth buster of permissionless blockchains. In late 2020, Mohan became the Shaw Visiting Professor at NUS where he is currently teaching a seminar course on distributed data and computing. In late 2019, he became an Honorary Advisor to TNeGA for its blockchain and other projects. In August 2020, he joined the Advisory Board of KBA of India. Since 2016, Mohan has been a Distinguished Visiting Professor of China's prestigious Tsinghua University. He has served on the advisory board of IEEE Spectrum, and on numerous conference and journal boards. Mohan is a frequent speaker in North America, Europe and Asia. He has given talks in 43 countries. He is highly active on social media and has a huge network of followers. More information can be found in the Wikipedia page at http://bit.ly/CMwIkP and resume at http://bit.ly/CMoNUS

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