



Fall 2020 Colloquium

Department of Computer and Information Sciences

Payment Channel Networks for Blockchain-based Cryptocurrencies

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Abstract: Although cryptocurrencies have witnessed explosive growth in the past year, they have also raised many concerns, among which a crucial one is the scalability issue of blockchain-based cryptocurrencies. Suffering from the large overhead of global consensus and security assurance, even leading cryptocurrencies can only handle up to tens of transactions per second, which largely limits their applications in real-world scenarios. Among many proposals to improve cryptocurrency scalability, one of the most promising and mature solutions is the payment channel network (PCN), which offers off-chain settlement of transactions with minimal involvement of expensive blockchain operations. In this talk, we look at the application of PCN in blockchain-based cryptocurrencies, investigate the problem of payment routing in PCN and the impact of pricing on routing, as well as the challenges and opportunities in this area.



Bio: Guoliang Xue, an IEEE Fellow, is a Professor of Computer Science and Engineering at Arizona State University. He earned a PhD degree in Computer Science in 1991 from the University of Minnesota. His research interests include resource allocation in computer networks, security and survivability issues in networks, and machine learning enabled crowdsourcing. He is a past editor of IEEE/ACM Transactions on Networking, Computer Networks, and a past area editor of IEEE Transactions on Wireless Communications for the Wireless Networking area. He was a TPC co-chair of IEEE INFOCOM2010 and a co-General Chair of IEEE CNS2014. He received several best paper awards, including the IEEE William R. Bennett Prize in 2019. He is an IEEE Fellow. He served as the VP-Conferences of the IEEE Communications Society (ComSoc) in 2016 and 2017. He is the Steering Committee Chair of IEEE INFOCOM.