

## Blockchain Security and Consensus Protocols

**Time:** 3:00 pm – 4:00 pm, Oct 21<sup>th</sup>, 2021

**Location:** Dale Hall 0206

**Abstract:** Blockchain, the technology behind Bitcoin, has emerged as a decentralized and “secure by design” technology, enabling a wide range of applications across a broad range of industries without relying on a central authority or assuming trust in individual players. However, blockchain security largely depends on the underlying consensus protocol that ensures the consistency of the many blockchain replicas. This talk will focus on the proof-of-work (PoW) blockchain consensus protocols and examine several key blockchain configuration options and their security properties and performance limits. We will show how some factors, such as mining strategy and network connectivity, can impact blockchain’s fundamental 50% threshold security assumption. Finally, we will introduce two innovative blockchain applications in the domains of privacy protection and wireless spectrum management.

**Biography:** Dr. Wenjing Lou is the W. C. English Endowed Professor of Computer Science at Virginia Tech and a Fellow of the IEEE. She holds a Ph.D. in Electrical and Computer Engineering from the University of Florida. Her research interests cover many topics in the cybersecurity field, with her current research interest focusing on wireless networks, privacy protection in machine learning systems, and security and privacy problems in the Internet of Things (IoT) systems. Prof. Lou is a highly cited researcher by the Web of Science Group. She received the Virginia Tech Alumni Award for Research Excellence in 2018, the highest university-level faculty research award. She received the INFOCOM Test-of-Time paper award in 2020. She is the TPC chair for IEEE INFOCOM 2019 and ACM WiSec 2020. She was the Steering Committee Chair for IEEE CNS conference from 2013 to 2020. She is currently a steering committee member of IEEE INFOCOM and IEEE Transactions on Mobile Computing. She served as a program director at US National Science Foundation (NSF) from 2014 to 2017.

