Faculty of Engineering
Distinguished Lecture Series

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Fractal: A high-performance, scalable, proof-of-stake blockchain

Professor Jonathan Katz

Professor of Computer Science, University of Maryland

Date	:	31 July 2019
Time	:	11:00 am - 12:00 pm
Venue	:	SHB 801, 8/F, Ho Sin Hang Engineering Building, CUHK

Abstract:

I will present Fractal, a high-performance, scalable, provably secure blockchain. The Fractal system incorporates two components. The first is a novel proof-of-stake protocol that is provably secure and addresses notorious challenges such as nothing-at-stake and grinding attacks. The second is a new method for achieving scalability by decoupling data distribution and data ordering to improve network throughput. Via rigorous analysis and real-world benchmarking, we show that Fractal achieves excellent block-propagation time as well as near-optimal throughput (up to 80% of the network-physical-limit). Fractal's cross-layer design can scale to 10,000+ nodes across the globe and, under modest network assumptions, sustain a throughput of 3,000+ tps.

Biography:

Jonathan Katz is a professor of computer science at the University of Maryland, and director of the Maryland Cybersecurity Center. He is a co-author of the widely used textbook "Introduction to Modern Cryptography," now in its second edition, as well as a monograph on digital signature schemes. He has served as the program chair for the annual Crypto conference as well as the ACM Conference on Computer and Communications Security, and as a member of the steering committee for the IEEE Cybersecurity Initiative and the State of Maryland Cybersecurity Council. He currently serves as an editor for the Journal of Cryptology.

Katz is a recipient of a Humboldt Research Award as well as the University of Maryland Distinguished Scholar-Teacher award. He was recently named an IACR Fellow.

All are welcome

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