学术报告会

时间：7月19日(周四) 10:00-11:00

地点：电院群楼2-406会议室

Multi-hop wireless pipeline powering Internet-of-Things

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Abstract:

Long-distance wireless transmission for IoT is technically challenging. Wireless communication is broadcast in nature, and wireless signal is propagated and decayed over distance, and interferes with each other. To enable long-distance information exchange, it is sensible to construct a multi-hop bidirectional wireless pipeline, so wireless devices can use lower power with less interference to relay for each other, achieving a higher spatial capacity. However, multi-hop wireless transmission has suffered from the curse that the throughput and reliability degrade quickly when the number of hops increases, due to mutual interference and inefficient resource management. Abandoning the traditional approach that the physical (PHY) layer deals with point-to-point transmission only, we let the PHY layer be adaptive to network topology and traffic. Following this line of breakthrough, we proposed a multi-hop physical-layer network coding (MPNC) solution to create a wireless bidirectional pipeline that can maintain an end-to-end (e2e) scalable throughput regardless of the distance while the e2e error rate increases merely linearly w.r.t. hop count.

Biography:

Lin Cai received her M.A.Sc. and PhD degrees in electrical and computer engineering from the University of Waterloo, Canada, in 2002 and 2005, respectively. Since 2005, she has been with the Department of Electrical & Computer Engineering at the University of Victoria, Canada, and she is currently a Professor. Her research interests span several areas in communications and networking, with a focus on network protocol and architecture design supporting emerging multimedia traffic over wireless, mobile, ad hoc, and sensor networks. She has served as a TPC symposium co-chair for IEEE Globecom'10 and Globecom'13. She has served as a member of the Steering Committee of the IEEE Trans. Big Data, an Associate Editor of the IEEE Trans. Wireless Communications, IEEE Trans. Vehicular Technology, and as the Distinguished Lecturer of the IEEE VTS Society. She was a recipient of the NSERC Discovery Accelerator Supplement Grants in 2010 and 2015, respectively, and the Best Paper Awards of IEEE ICC 2008 and IEEE WCNC 2011. She has founded and chaired IEEE Victoria Section Vehicular Technology and Communications Joint Societies Chapter. She is a registered professional engineer of British Columbia, Canada.