SEMINAR ANNOUNCEMENT

DEPARTMENT OF ELECTRICAL AND COMPUTER ENGINEERING
COLLEGE OF DESIGN AND ENGINEERING
Website: https://cde.nus.edu.sg/ece

Area: Communications & Networks

Host: Dr. Mei Weidong

TOPIC	:	**IRS-Aided Wireless Relaying: Deployment Strategy and Capacity Scaling**
SPEAKER	:	**Mr Kang Zhenyu** **Graduate Student, ECE Dept, NUS**
DATE	:	**Wednesday, 20 April 2022**
TIME	:	**10.00AM to 10.30AM**
WEBINAR	:	**Join Zoom Meeting** **https://nus-sg.zoom.us/j/84688115424?pwd=UXBoODBVSFRYZ1BMWVJrNVh1cnh0Zz09** **Meeting ID: 846 8811 5424** **Passcode: 483284**

ABSTRACT

Intelligent reflecting surface (IRS) has emerged as a promising technology to enhance the spectral/energy efficiency of future wireless communication systems. We consider an intelligent reflecting surface (IRS)-aided wireless relaying system, where a decode-and-forward relay (R) is employed to forward data from a source (S) to a destination (D), aided by M passive reflecting elements. We consider two practical IRS deployment strategies, namely, single-IRS deployment where all reflecting elements are mounted on one single IRS that is deployed near S, R, or D, and multi-IRS deployment where the reflecting elements are allocated over three separate IRSs which are deployed near S, R, and D, respectively. Under the line-of-sight (LoS) channel model, we characterize the capacity scaling orders with respect to an increasing M for the IRS-aided relay system with different IRS deployment strategies. For single-IRS deployment, we show that deploying the IRS near R achieves the highest capacity as compared to that near S or D. While for multi-IRS deployment, we propose a practical cooperative IRS passive beamforming design which is analytically shown to achieve a larger capacity scaling order than the optimal single-IRS deployment (i.e., near R) when M is sufficiently large.

BIOGRAPHY

Zhenyu Kang received his B.Eng. degree in 2018 from Harbin Institute of Technology in communication engineering, and M.Sc. degree in 2019 from National University of Singapore in electrical engineering. He is currently pursuing the Ph.D. degree with the Department of Electrical and Computer Engineering, National University of Singapore. His research interests include UAV communications, intelligent reflecting surface, and convex optimization.

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