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THE CHINESE UNIVERSITY OF HONG KONG

Department of Information Engineering

Seminar

Wireless Powered Mobile Computing Systems: Resource Allocation for User Cooperation Channels

by

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The Chinese University of Hong Kong

Abstract

In this talk, we consider a wireless powered mobile edge computing (MEC) system, where the access point (AP) integrated with an MEC server broadcasts energy to two users who have independent computation-intensive tasks. A harvest-then-offloading protocol is adopted. During the offloading period, the near user helps to relay the far user's information before offloading its own input data to alleviate the doubly near-far effect. Our aim is to minimize the AP's transmission energy, which is then optimally solved by a two-phase method. In the first phase, the optimal power and time allocation of a sum-energy-saving maximization (SESM) problem with a given energy transmit power is obtained by using the Lagrangian method. In the second phase, the optimal minimum-energy transmit power is obtained by a bisection search method. The numerical results demonstrate that our proposed computation offloading scheme with user cooperation have dramatic performance improvement compared to the baseline approaches.

Biography

Kai-Kit Wong received the BEng, the MPhil, and the PhD degrees, all in Electrical and Electronic Engineering, from the Hong Kong University of Science and Technology, Hong Kong, in 1996, 1998, and 2001, respectively. He is Professor of Wireless Communications at University College London, United Kingdom. Prior to this, he took appointments at the University of Hull, UK and the University of Hong Kong, and also visiting positions at Alcatel-Lucent, Holmdel, US and the Smart Antenna Research Group at Stanford University. His current research interests center around game-theoretic cognitive radio networks, cooperative communications, physical-layer security, physical-layer caching and fog computing, massive MIMO, HetNets, full-duplex radios, and energy-harvesting wireless communications.

Professor Wong is Fellow of IEEE and IET, and is Senior Editor of IEEE Communications Letters and IEEE Wireless Communications Letters, and also has served in several other editorial boards.

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