



THE CHINESE UNIVERSITY OF HONG KONG
Department of Information Engineering

Seminar

**Socially-Driven Cooperative Networking:
A Social Group Utility Maximization Framework**
by
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Germany

Date : 26 February, 2016
Time : 2:00pm – 3:30pm
Venue : Room 833, Ho Sin Hang Engineering Building
The Chinese University of Hong Kong

Abstract

The combination of exploding demand and limited resources poses a significant challenge for future wireless network design. Since hand-held devices are carried by human beings, we advocate a socially-driven approach to enhance cooperative networking. Such cooperation among mobile devices with trust enables self-organizing networking, and has potential to achieve substantial gains in spectral efficiency and lead to significant increases in network capacity. In particular, mobile devices are coupled in the physical domain due to the interference relationship in data transmissions, and also coupled in social domain due to the social ties among them. It would be a win-win case for these devices to help those users having social trust with them. With this insight, we propose a novel social group maximization framework for cooperative networking, where each user carries out resource allocation to maximize its social group utility, defined as the weighted sum of its own utility and the utilities of other users having social trust towards it. Through varieties of wireless networking applications, we demonstrate that the social group utility maximization framework can provide rich modeling flexibility for cooperative networking.

Biography

Dr. Xu Chen received the Ph.D. degree from the Chinese University of Hong Kong in 2012. From 2012 to 2014, Dr. Chen was a postdoctoral research fellow with Arizona State University, Tempe, USA. Since April 2014, he has joined the Faculty of Mathematics and Computer Science, University of Goettingen, Germany, as a Humboldt Scholar Fellow. Dr. Chen is the recipient of the prestigious Humboldt research fellowship awarded by Alexander von Humboldt-Foundation, the 2014 Hong Kong Young Scientist Award Runner-Up by Hong Kong Institution of Science, the Best Paper Runner-Up Award in IEEE International Conference on Computer Communications (INFOCOM 2014), and the Honorable Mention Award in IEEE International Conference on Intelligence and Security Informatics (ISI 2010). Dr. Chen is an Associate Editor of EURASIP Journal on Wireless Communications and Networking, guest editor of International Journal of Big Data Intelligence, the symposium co-chair of WCNC'17, the special track co-chair of ISVC'15, publicity co-chair of NetGCoop'14, and serves as a technical program committee (TPC) member for many leading conferences including ACM MOBIHOC, IEEE GLOBECOM, ICC, and WCNC.

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