

# Green Internet of Things for Smart Cities

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**Abstract** Emerging smart cities will leverage information and communication technologies (ICT) to address urban challenges and improve the well-being of citizens. A key development in ICT is the Internet of Things (IoT), which extends the Internet to connect not only computers and smart devices carried by people, but “things” with embedded sensors, actuators, and networking capabilities. IoT will enable many new services and applications such as smart grids, intelligent transportation, e-health, smart homes/buildings/offices/factories, which will be an integral part of the future smart cities. Of particular interest are applications that contribute to the global efforts towards a greener society by reducing energy consumption, shortening travel times, etc. In many applications, IoT will employ embedded radios and wireless machine-to-machine communications to enable ubiquitous connectivity anywhere any time. Many smart devices with embedded radios are battery operated, and in many situations battery replacement may be awkward if not impossible. Regardless of the power source, with deployment of billions of devices anticipated, global power consumption of IoT may become considerable. Therefore in the continued development of IoT for deployment in smart cities, it is inevitable that energy efficiency becomes an important part of the research agenda towards “green IoT for smart cities”. In this presentation, we shall give an overview of IoT for smart cities and examine how IoT contributes to a greener society. We shall also highlight some of our recent research results on utilizing the powerful computation capacity of cloud computing to enable green IoT for smart cities. Open problems and future research directions will be discussed.



**Biography** **Victor C. M. Leung** is a Professor and the holder of the TELUS Mobility Research Chair in Advanced Telecommunications Engineering in the Department of Electrical and Computer Engineering, the University of British Columbia. His research interests are in the areas of wireless networks and mobile systems. He has co-authored more than 800 technical papers in international journals and conference proceedings, in addition to a number of edited books and book chapters in these areas. Several of his papers have been selected for best paper awards.

Dr. Leung is a registered professional engineer in the Province of British Columbia, Canada. He is a Fellow of IEEE, the Royal Society of Canada, the Engineering Institute of Canada, and the Canadian Academy of Engineering. He was a Distinguished Lecturer of the IEEE Communications Society. He has served on the editorial boards of the IEEE Journal on Selected Areas in Communications (JSAC) – Wireless Communications Series, the IEEE Transactions on Computers, Wireless Communications, and Vehicular Technology, and currently serves on the editorial boards of the IEEE JSAC Series on Green Communications and Networking, IEEE Wireless Communications Letters, Computer Communications, as well as several other journals. He has guest-edited many journal special issues, and provided leadership to the technical program committees and organizing committees of many international conferences. Dr. Leung is a winner of the IEEE Vancouver Section Centennial Award and the 2011 UBC Killam Research Prize.