

报告

用于智能渠道管理中的无线传感网络系统

An Integrated Wireless Sensor Network for Smart Drainage System

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讲者介绍 Biography

Professor Ke-Li Wu received the B.S. and M.Eng. degrees from the Nanjing University of Science and Technology, Nanjing, China, in 1982 and 1985, respectively, and the Ph.D. degree from Laval University, Quebec, QC, Canada, in 1989. From 1989 to 1993, he was with the Communications Research Laboratory, McMaster University, as a Research Engineer and a Group Manager. In March 1993, he joined the Corporate R&D Division, COM DEV International, the largest Canadian space equipment manufacturer, where he was a Principal Member of Technical Staff. Since October 1999, he has been with The Chinese University of Hong Kong, Hong Kong, where he is a Professor and the Director of the Radiofrequency Radiation Research Laboratory (R3L).

He has authored or coauthored numerous publications in the areas of EM modeling and microwave passive components, microwave filter and antenna engineering. His current research interests include PEEC and DPEC electromagnetic modeling of high speed circuits, RF and microwave passive circuits and systems, synthesis theory and practices of microwave filters, antennas for wireless terminals, LTCC-based multichip modules (MCMs), and RF identification (RFID) technologies.

Prof. Wu is a Fellow of IEEE, a member of IEEE MTT-8 subcommittee (Filters and Passive Components) and also serves as a TPC member for many prestigious international conferences including International Microwave Symposium. He was an Associate Editor of IEEE Transactions on MTT from 2006 to 2009. He was the recipient of the 1998 COM DEV Achievement Award and Asia Pacific Microwave Conference Prize in 2008 and 2012, respectively.

报告摘要 Abstract

The drainage and sewage system is one of the most important infrastructures for a modern city. With the rapid expansion of urban area, the drainage and sewage management needs new technologies to make it more reliable, efficient, secure and automatic. To effectively manage a city-wide drainage system, the management system needs to collect some critical information timely, analyze historic data and be able to predicate and foresee any possible catastrophe. The information includes abnormal rise of water level; concentration of explosive gases and hazardous gases under manholes.

This talk will introduce an on-going R&D project in CUHK on a wireless sensor network for a smart drainage system. The project aims at helping the drainage services department to find out the possible flooding blackspots and to monitor the level of explosive and hazardous gases.

The developed wireless sensor network includes three parts: (1) a underground devices that contains a universal sensor interface, high frequency communication module with an adoptive antenna and various sensor modules; (2) a wireless access base station that establish a mesh network that is responsible receiving the data from the module underneath manholes and communicating with a cloud server through a 4G network; and (3) a software system that manages the collected data, presents the data a smart phone APP and sends the warning message to the administrator.