

Seminar on Wireless Localization and Propagation

**RIEC #2 Bldg. (4F, Large Mtg. Room), Katahira Campus, Tohoku University,
15:00 – 17:00, November 22, 2012**

Sponsored by

2012 RIEC Collaboration Project Research (Unlicensed Band Wireless Communications)

This Seminar will discuss a channel sounder for indoor wireless communications and wireless localization. The first topic is related to a very basic technology of wireless communications and will be revisited by Prof. Tsutomu Takeuchi, Kyoto Sangyo University for various new applications. The wireless localization has been discussed for years, however, practical use has yet to wait further. Prof. Abbas Yongacoglu, University of Ottawa (currently visiting Prof. at RIEC, Tohoku University) will be discussing the problems of wireless localization.

Program

1. Invited speech #1 – will be given in Japanese

- **Prof. Tsutomu Takeuchi, Kyoto Sangyo University on**
“An ultra wide band channel sounder for indoor mobile radio”

Abstract

Channel sounding for propagation analysis has performed the important roles in the development of mobile communication systems, especially, in the development of micro-cell systems and high-speed wireless LAN. In this presentation, various methods of channel sounding and the measured results of previous measurements are described and the ultra wide-band channel sounder with 0.5ns time delay resolution developed by the presenter is described with some measured results emphasizing the importance of ultra time delay resolution.

2. Invited speech #2 – will be given in English

- **Prof. Abbas Yongacoglu, University of Ottawa on**
“A discussion on some of the wireless localization problems”

Abstract

In this talk, we will first briefly discuss the motivation of estimating the location and power of emitters in a cognitive radio networks. We will first start with the simple case of determining the location of an emitter of known power using the received signal strengths at 3 or more sensors. Then we will modify the problem and estimate the location of an emitter when the transmitted power is unknown by the receivers. The problem will become much more complex when the uncertainties introduced by the channel are taken into account. We will discuss some of the techniques proposed in the literature for location estimation when the received signals at different sensors undergo log-normal shadowing. Finally we will briefly discuss the issues encountered when a single emitter is replaced by multiple emitters. Our ongoing research approaches this last scenario by applying Metropolis Hastings (MH) technique. A brief discussion on accept–reject method of pdf generation and its relevance on MH will also be presented.

Speakers

Prof. Tsutomu Takeuchi 1978年3月 京都大学大学院工学研究科電子工学専攻 修了
1978年4月 電電公社 入社
1978年5月 同 横須賀電気通信研究所 衛星通信方式研究室
1982年7月 京都大学工学部 助手
1994年4月 京都産業大学工学部情報通信工学科 教授
2007年4月 同 コンピュータ理工学部ネットワークメディア学科 教授 現職

Prof. Abbas Yongacoglu received the B.Sc. degree from Boğaziçi University, Turkey, in 1973, the M. Eng. degree from the University of Toronto, Canada, in 1975, and the Ph.D. degree from the University of Ottawa, Canada, in 1987, all in Electrical Engineering. He worked as a researcher and a system engineer at TUBITAK Marmara Research Institute in Turkey, Philips Research Labs in Holland and Miller Communications Systems in Ottawa. In 1987 he joined the University of Ottawa as an assistant professor. He became an associate professor in 1992, and a full professor in 1996. His area of research is digital communications with emphasis on physical layer of wireless communication systems.



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