Guest Editorial
Signal Processing for Wireless Communications II

I. Introduction

PART I of this special issue on signal processing for wireless communications, published in October 1998, contained 21 papers on diversity and antenna arrays, blind techniques, and orthogonal frequency division multiplexing (OFDM)-related techniques. In this issue, we present 22 papers on equalization and signal detection and multiuser detection and code division multiple access (CDMA)-related techniques

II. Equalization and Signal Detection

Equalization and signal detection are very important techniques for system performance improvement. We have eight papers on this topic. The first paper by Chen *et al*. uses dynamic channel description to develop a joint maximum likelihood sequence estimation (MLSE) receiver, while the paper by Omidi *et al*. proposes a joint channel estimation and data detection technique for fading channels. The papers by Baccarelli *et al*. and by Savazzi *et al*. propose novel approaches for channel tracking and channel equalization, respectively. The paper by Nunes and Leitão applies nonlinear filtering for equalization and signal detection. The last three papers, by Kim and Shamsunder, Ariyavisitakul and Li, and Chen *et al*., apply soft output or soft decisions to suppress error propagation in decision-directed equalizers.

III. Multiuser Detection and CDMA-Related Techniques

The papers in this section deal with signal processing for CDMA systems. The first five papers are concerned with multiuser detection. The paper by Sayeed *et al*. describes a new structure for multiuser detection that exploits joint multipath-Doppler diversity to better operate in fast fading environments. The papers by Causey and Barry and by Lim *et al*. discuss blind multiuser detection using linear prediction and Kalman filtering, respectively. Techniques to identify the active users for multiuser detection are described in the paper by Wu and Chen, and computationally efficient structures for multiuser detection are presented in the paper by Uppala and Sahr. Interference between narrowband and CDMA systems is studied in the next two papers, with the paper by Gelli *et al*. using cyclostationarity-based filtering to reduce narrowband interference into CDMA systems, while the paper by Rainbolt and Miller discusses transmitter filtering to reduce CDMA interference into narrowband systems. The next three papers consider techniques to reduce CDMA interference between users. The paper by Kansal *et al*. uses maximum signal-to-interference noise ratio RAKE filtering, the paper by Das and Morgera uses neural network techniques, and the paper by Hafeez and Stark uses decision feedback sequence estimation modified for unwhitened intersymbol interference. Finally, the paper by Fanucci *et al*. describes a single-chip ASIC implementation of a signal recognition and code acquisition algorithm.

IV. Selected Topics

Other applications of signal processing in wireless communications are presented in this section. The paper by Turin and van Nobelen uses a signal processing approach to model fading channels. The papers by Beritelli *et al*. and by Srinivasan and Chellappa use voice detection and video processing for wireless systems.

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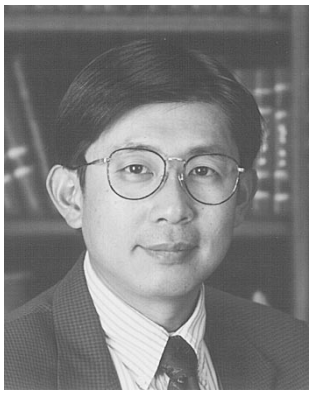
Dr. Li is an Editor for wireless communication theory for IEEE TRANSACTIONS ON COMMUNICATIONS.



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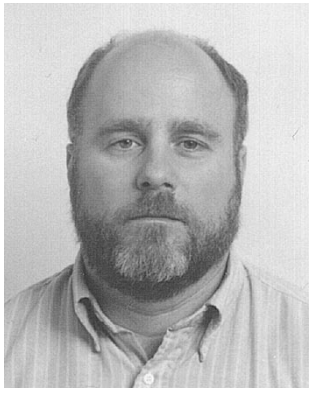
Dr. Liu has received numerous awards, including the 1994 National Science Foundation Young Investigator Award, the IEEE Signal Processing Society's 1993 Senior Award (Best Paper), the 1994 George Corcoran Award for outstanding contributions to electrical engineering education, and the 1995–96 Outstanding Systems Engineering Faculty Award in recognition of outstanding contributions in interdisciplinary research. He has been an Associate Editor of the IEEE TRANSACTIONS ON SIGNAL PROCESSING. He was a Guest Editor of special issues on multimedia signal processing and technology of the PROCEEDINGS OF THE IEEE, a founding member of the Multimedia Signal Processing Technical Committee of the IEEE Signal Processing Society, and is Technical Cochair of the IEEE International Multimedia Signal Processing Workshop to be held in Copenhagen, Denmark.



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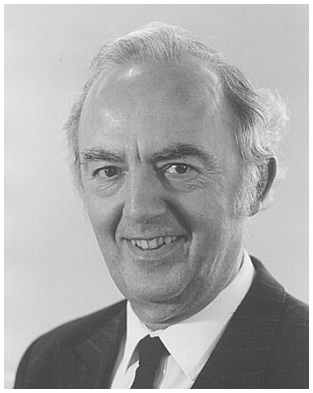

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Dr. Andersen is a former Vice-President of URSI. He is on the editorial board of *Wireless Information Networks and Wireless Personal Communications* and Associate Editor for wireless communications of the IEEE TRANSACTIONS ON ANTENNAS AND PROPAGATION. He has served three times as Guest Editor of the IEEE JOURNAL ON SELECTED AREAS IN COMMUNICATIONS. He was President of the Second World Congress on Electricity and Magnetism in Biology and Medicine, held in Bologna, Italy, in June 1997.