Hindawi Publishing Corporation
EURASIP Journal on Wireless Communications and Networking
Volume 2010, Article ID 896041, 2 pages
doi:10.1155/2010/896041

Editorial

Multimedia Communications over Next Generation Wireless Networks

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Received 16 December 2010; Accepted 16 December 2010

Recent advances in communication technologies have witnessed a growing and evolving multimedia-content-delivery market based on information gathering, manipulation, and dissemination. Unlike traditional communication systems, a fundamental challenge for next generation wireless networks is the ability to transport multimedia content over a variety of networks at different channel conditions and bandwidth capacities with various requirements of quality-of-service. There are many open problems for this challenging issue such as signal processing, collaborations, power management, flexible delivery, specialization of new content, dynamic access.

This exciting special issue has received large submissions that covered all topics of wireless multimedia technology. Due to page budget and timing constraints, many good quality works have been turned away, and 15 papers have finally been selected after a careful and highly competitive review process. These papers are organized into three sections in this special issue, namely multimedia service, multimedia communications and multimedia information processing.

The first set of six papers describes the emerging multimedia service technology. The first paper, "*Cooperative coding and caching for streaming data in multihop wireless Networks*" by D. Wang eta l. studies the distributed caching managements for the current flourish of the streaming applications in multihop wireless networks. The second paper, "*Converged wireless networking and optimization for next generation services*" by J. Rodriguez et al. provides the key achievement that has been tunneled into first prototypes for showcasing next generation services for operators and process manufacturers. The third paper, "*New trends on ubiquitous mobile multimedia applications*" by J. P. C. Rodrigues et al. tackles several important challenges such as communication cost and device limitations for development of ubiquitous multimedia applications. The fourth paper, "*Power-aware DVB-H mobile TV system on heterogeneous multicore platform*" by Y.-S. Lu et al. proposes a mobile TV system on a heterogeneous multicore platform which utilizes a DVB-H wireless network to receive the TV program signal. The fifth paper, "*Embedding protection inside H.264/AVC and SVC streams*" by C. Lamy-Bergot and B. Gadat, describes a backward compatible error protection mechanism embedded into the H.264. The sixth paper, "*Quality-assured and sociality-enriched multimedia mobile mashup*" by H. Zhang et al. presents a metadata-based mashup framework in next generation wireless networks, which guarantees the quality and supports social interactions.

The next set of five papers deals with multimedia communications problems. The first paper, "*Packet scheduling algorithm by the ratio of the transmit power to the transmission bits in 3GPP LTE downlink*" by J. Song et al. proposes a novel minimum transmit power-based packet scheduling that can achieve power-efficient transmission to the UEs. The second paper, "*Cross-layer handover scheme for multimedia communications in next generation wireless networks*" by Y. Tang et al. combines session initiation, fast mobile IPv6 and media independent handover protocols. The third paper, "*A dynamic utility adaptation framework for efficient multimedia service support in CDMA wireless networks*" by K. Timotheos and S. Papavassiliou, introduces a novel generic framework that enables the dynamic adaptation of real-time multimedia

utilities. The fourth paper, "*Adaptive reliable routing based on cluster hierarchy for wireless multimedia sensor networks*" by K. Lin et al. proposes an adaptive reliable routing based on clustering hierarchy, which includes energy prediction and power allocation mechanism. The fifth paper, "*COSR: A reputation based secure route protocol in MANET*" by F. Wang et al. proposes a cooperative on-demand secure route against malicious and selfish behaviors.

The final set of four papers addresses multimedia information processing issues. The first paper, "*A multimedia application: spatial perceptual entropy of multichannel audio signals*" by S. Chen et al. builds a binaural cue physiological perception model on the ground of binaural hearing which represents spatial information in the physical and physiological layers. The second paper, "*Novel approaches to enhance mobile WiMax security*" by T. Shon et al. investigates the current Mobile WiMax security architecture focusing mainly on pointing out new security vulnerabilities. The third paper, "*A speed adaptive media encryption scheme for real-time recording and playback system*" by C. Xiao et al. proposes a novel adaptive media encryption scheme. The fourth paper, "*ESVD: an integrated energy scalable framework for low power video decoding systems*" by W. Ji et al. is dedicated to developing an energy-scalable video decoding strategy for energy limited mobile terminals.

Acknowledgments

The guest editorial team would like to thank all authors for submitting their quality work to this special issue and to the numerous reviewers' expert contributions. Finally, special thanks go to Professor Luc Vandendorpe, Editor-in-Chief for approving and making this issue possible and to Professor Mariam Albert for her priceless guidance along the whole process of this special issue.

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