

GUEST EDITORIAL PREFACE

Special Issue on Wireless Multimedia Sensor Networks (WMSN'12) Workshop

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Recent advances in low-cost hardware and in low-power CMOS digital cameras are enabling the development of embedded multimedia wireless sensors that will allow the deployment of low-cost, low-power devices able to transmit multimedia content. These new platforms need the development of new sensor architectures and protocols able to cope with the stringent demands of multimedia data. *The 1st International Workshop on Wireless Multimedia Sensor Networks*, held in conjunction with the *8th IEEE International Conference on Wireless and Mobile Computing, Networking and Communications* (WiMob 2012) in Barcelona in October 8, 2012, aimed to bring researchers to submit innovative techniques at all protocol stack layers. This special issue brings out an extended and updated version of a selection of 3 out of the 7 papers presented in the Workshop.

The first article of this issue is *A Cross-layer QoE-based Approach for Event-Based Multi-tier Wireless Multimedia Sensor Networks*, by

Denis Rosário, Zhongliang Zhao and Torsten Braun. The authors introduce a cross-layer approach to enhance the video quality level for event-based multi-tier WMSNs. In particular, the paper presents an adaptive cross-layer approach, which includes a Quality of Experience (QoE)-aware FEC mechanism for WMSNs by generating redundant packets, based on frame importance from user's experience. The proposed cross-layer approach provides video distribution with QoE assurance, while achieving energy-efficiency.

The second article of this issue is *Low-complexity encoding in block-based hybrid video codecs by moving motion estimation to decoder side*, by Johannes Karlsson. The author proposes an approach to reduce the encoder complexity for video compression in wireless sensor networks. The idea is to remove the motion estimation from the encoder and perform the motion prediction at the decoder side. In this

way, higher coding efficiency can be achieved reducing complexity in the sensor side.

The third article is *Caching Based Transport Optimization for Wireless Multimedia Sensor Networks*, by Nestor Michael C. Tiglao and António M. Grilo. The paper deals with optimizing the transport layer to address the constraints posed by multimedia data in wireless sensor networks. The authors propose a NACK-based repair scheme, coupled with the MAC retransmission protocol, able of caching data at intermediate nodes. In this way, the authors claim that real-time end-to-end delay can be reduced while maintaining reliability and energy efficiency in the presence of high channel error rates.

The fourth article is *An Acoustic-Visual Collaborative Hybrid Architecture for Wireless Multimedia Sensor Networks*, Mohammad Alaei and Jose M. Barcelo-Ordinas. The paper presents an establishment of hybrid collaboration between acoustic and visual sensor nodes to collaborate in surveying the environment.

Acoustic sensors play the role of assistants for visual sensors to detect and localize the occurred objects/events consuming much less energy than which is required for doing these procedures by visual sensors. When an object/event is detected and localized by the acoustic sensor, the visual sensor comes into action to transmit the visualized data. In this way, a good trade-off is achieved in terms of energy consumption for both kinds of sensors.

The guest editors would like to thank the journal's associate editor-in-chief, Dr. Vincenzo De Florio, for his guidance and assistance through the whole process. We would like to extend their special thanks to all authors for their contributions and we would like to thank the reviewers who gave invaluable feedback during the review process.

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