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Special Issue on

Joint Multimedia and Transmission Processing Over Next-Generation Wireless Networks

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Multimedia comprises a myriad of media combinations including texts, images, animations, audios, videos, and interactive contents. As the number and variety of mobile, multimedia, and multicast applications are growing at an exponential rate, mobile network providers are experiencing a huge increase in the real-time multimedia traffic load. This dramatic increase in the traffic is also expected to put a lot of burden on the next-generation wireless networks including the highly anticipated 5G networks. With the dramatic explosion of the real-time multimedia traffic and the ever-increasing number of users, it is, indeed, difficult to assure both multimedia processing and multimedia transmission over next-generation wireless networks. Therefore, developing an agile as well as a scalable framework to consider joint multimedia and transmission processing over next-generation wireless networks is of utmost importance.

The aim of this special issue is to identify and address the key multimedia processing and transmission issues, which need to be addressed for different multimedia services including audio, video, and data. In particular, the special issue focuses on the need to develop cross-layer approaches for joint optimization of multimedia quality, content protection, resource scheduling, and transmission efficiency in next-generation wireless networks. In the future, the mobile user equipment is expected to have access to various wireless, mobile, and security technologies at the same time, and it is important to combine the different flows from different technologies using advanced multimedia processing, vertical multistreaming, vertical multihoming, and so forth. In other words, an integrated multimedia and transmission processing is essential for low latency, low power, high throughput, and high reliability of multimedia services in the next-generation wireless communication networks. Prospective authors are encouraged to submit original high quality papers with QoS and security interworking rather than addressing them in a separate manner.

Potential topics include but are not limited to the following:

- Joint optimal allocation of resources and processing over cross-layers
- Channel coding for joint source-channel video transmission
- Power adaptation in wireless networks
- Quality of Service (QoS) support in next-generation network for joint multimedia transmission and processing
- Packet scheduling in ultra-dense networks for efficient video transmission
- Content-aware resource allocation
- Error-resilient video coding
- Wireless network channel modeling and channel coding for video transmission and processing—Multimedia Sensor Networks
- Video surveillance using sensors
- Video surveillance networks
- Security systems based on face, gait, and fingerprint recognition
- Adaptive encryption for real-time mobile multimedia services
- Resource optimized lightweight authentication for multimedia stream in machine-to-machine networks
- Lightweight encryption for video stream in device-to-device and/or mobile cloud system(s)
- Privacy protection for multimedia content delivery service
- Machine learning based suspicious behavior detection in real-time video surveillance streaming
- Joint optimization of multimedia quality, content protection, and communication energy efficiency

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Papers are published upon acceptance, regardless of the Special Issue publication date.

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