

Advanced Video Processing for Future Multimedia Communication Systems

by

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Abstract:

Recording, processing, and transmission of video sequences are build-in features of most recent electronic consumer devices, including smart phones, digital cameras, and networked television systems. Thereby, the demand on image resolution, visual quality, and video functionality has steadily increased over time and this has raised a number of new and interesting research issues. In this talk we will focus on some recent developments in the field of image and video signal processing for network-connected multimedia systems.

After a short introduction to the basic concept of hybrid video coding we will first talk about concepts for improving compression efficiency using on in-loop denoising and spatiotemporal prediction. We will discuss scalable lossless compression of video data and show how energy efficiency can be taken into account for video coding systems. Moving to future 3-D and multi-view systems, we will show how mixed-resolution multi-view systems can be up-scaled to higher quality using super-resolution and talk about scaled representation of multi-view data using motion and disparity compensated spatiotemporal filtering. Finally, we will introduce random sampling as a new concept for efficient reconstruction of visual data.