

Modeling and Compression of 3D Image Data

by

Professor Ioan TĂBUŞ

Tampere University of Technology

Tampere, Finland

Abstract:

This lecture will focus on the need of new techniques for image compression and analysis, scaling well to the contemporary collections of large images, having various kinds of structure, i.e., temporal structure (in video), multiview structure (in multiview sequences), spatial resolution structure (in gigapixel images). The increase in the number of images and in the image sizes creates new challenges for the processing methodologies and at the same time offers new opportunities for image understanding, by obtaining better description of the underlying objects and their interactions. The methodological advancements are based on advanced statistical modeling in conjunction with information theoretic methods, using context representations and sparse models, with the ambitious final goal of extracting the important information from image data.

The recent results of the group in modeling and in lossless and lossy compression of depth images, of color images conditional on depth images, and conditional coding of stereo images will illustrate one field with promising opportunities for further advancements in signal processing.