

Kolloquiumsvortrag von Jürgen Seiler:

Spatio-Temporal Prediction in Video Coding

The transmission and playback of video signals has become still more and more important in many modern communication systems. This is only possible since video data can be strongly compressed. One major cause for being able to compress video data so effectively is the prediction of the video signal during the encoding. Thus the compression efficiency of a video codec strongly depends on its ability to predict the signal being coded.

Modern video codecs, as e. g. the H.264/AVC, either use temporal or spatial correlations for predicting the video signal. Normally, the spatial prediction is performed by continuing the signal from already transmitted areas into the area that is predicted. Temporal prediction mainly is obtained by performing motion compensation whereat for the region to be predicted a corresponding region in a previous frame is determined that matches the actual region best. In order to refer to this region a motion vector is transmitted as side information. Although, most encoders can switch between temporal and spatial prediction for different areas of a frame, no combined spatio-temporal prediction is performed.

Within the scope of the talk an overview of the main ideas and basic parts of an state-of-the-art hybrid video coder will be given with special focus on the prediction techniques. Additionally, a recently proposed novel spatio-temporal prediction algorithm will be introduced and explained in detail.