

MSc Thesis Project

Distributed video coding for flexible access in multiview video

Introduction: Classic video coding is characterized by complex encoders, which perform e.g. motion compensation, while the decoders are simpler. This is efficient for broadcast applications, where encoding is performed once while there are many decoders. In many current and emerging video applications, e.g. in mobile, the encoder may well be resource constrained while the network or the receiving side may have more computational resources. A new paradigm in video coding is emerging to address this. It has been coined distributed video coding. The coding scheme is changed so that the decoder searches for good solutions, while the encoder only sends a simple parity code to let the decoder decide which is correct. The principle is based on and inspired by now classic results in Information Theory namely Slepian-Wolf and Wyner-Ziv, but only recently have these ideas been applied to video coding. One application where DVC can provide significant benefits is in flexible access of Multiview, where only the information from the requested views will be extracted from the coded data.



Contents: The project involves working with DVC and multiview techniques in software, as well as work to combine these to improve performance. It may encompass a full encoder and decoder or only focus on some aspects of the coding, e.g. multiview, intra/interframe switching or the coding module based on error-correction techniques.

Prerequisites: Knowledge of video coding and processing as e.g. in 34241 Digital Video Technology or 34250 Advanced Image and Video Coding (Supplementary: 34240 Data Compression or 01259 Error Correcting Codes).

Additional information: Contact teacher.

Practical details: The project is intended for 1 or 2 students with 30 ECTS-points per student.

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