



Royal Institute of Technology

MASTER OF SCIENCE THESIS

Video Coding in H.26L

by

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Abstract

For the past few years, the capacity of global networks and communication channels has increased considerably. This allows for real-time applications like video conferencing and video-on-demand using compressed video. State-of-the-art video coding solutions such as H.263, MPEG-2 and MPEG-4 all have one goal in common: to achieve highest possible image quality for lowest possible bit-rate.

During 1999, the development of a new video coding standard, H.26L, started. H.26L is supposed to replace its predecessor H.263, and one of the goals is to achieve 50% greater bit-rate savings compared to H.263. The first proposal for the H.26L standard, presented in August 1999, achieves higher compression efficiency compared to H.263. However, the goal of 50% is not yet met.

This thesis proposes a method to use adaptive arithmetic coding (AAC) for entropy coding in an H.26L video codec in order to further improve the compression efficiency. It is a general solution that can be applied to any video codec. However, implementations have been made for the H.26L video codec only. AAC is based on an entirely different strategy than the variable length entropy coding technique employed in H.26L and many other video codecs.

Three experimental models for adaptation to local statistics have been designed and investigated. Results show that for high bit-rate environments significant bit-rate savings can be made using AAC, while less can be won for lower bit-rates.

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