

Abstract

In recent years, due to the rapid development of technology and computers, people are accustoming to sharing the video content through the smartphones. High Efficiency Video Coding (HEVC) is thus developed as the new generation of video compression standard. HEVC is more efficient for video compression, compared with previous standards.

HEVC applies quad-tree structure to improve coding efficiency, and its coding procedure includes Coding Unit (CU), Predict Unit (PU), and Transformation Unit (TU). The quad-tree coding structure of TU includes different sizes of transformation, from 32x32, to 4x4. The quad-tree structure of TU can improve the coding performance, but it increases the computational complexity because of its complicated tree structure than conventional video coding substantially.

For a TU block, if all its coefficients are zero, this TU can have the lowest rate-distortion (RD) cost during the rate-distortion procedure. In other words, the rest TU encoding procedures from this TU can be terminated. In this project, coefficients in a TU were first detected. If this TU was with all zero-block coefficients, then the encoding procedure for TU is terminated. Experiments show that the processing time of TU reduced approximately 38%, with little bit rate increased, and the PSNR was almost the same.