

Performance evaluation of H.264 under different optimization settings on an embedded platform

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ABSTRACT

Merging of mobile computing and multimedia application opens many new opportunities for industry of information technology and benefits our daily life. Nevertheless, the computing resources of mobile devices are restricted that makes implementing multimedia applications a challenging task. Code optimization regarding to computing latencies, memory space, and power consumption are curtail in design. This thesis focus on tuning H.264 codes using different gcc optimization settings on an ARM based embedded platform and analysis theirs ' performance. A board level profiling is conducted on the JM22 base-line design. The profiling identified function `get_block_luma()` being the most frequent function. The function is then compiled and optimized under different gcc settings. The generated codes were executed on the board and tested for performance separately. The tests show gcc setting O1 provides both performance and cost advantages. In average, using O1 will generate code that XX times faster and XX smaller in code size. These outcomes would be beneficial for future implementing of multimedia applications on mobile devices.

Keywords : Embedded Systems、 Compiler、 H.264

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