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Abstract
Variable-Length Code (VLC) has been widely used in multimedia and lossless coding compression such as JPEG and MPEG. Due to the traditional Variable-Length Code needs a huge codeword table to perform the coding procedure, therefore, the VLSI architecture of traditional VLC needs a huge memory to store the codeword table.

For this reason, this thesis proposed a low memory cost algorithm of VLC (class-based VLC) for MPEG-4. We use two memories to replace a huge memory, not only to simplify the memory size, but also to keep the same function of traditional ones. Compared with previous methods, our method can reduce about 58.5%~74% memory size, and thus needs lower hardware cost.

Besides, our method also can be verified in an embedded system with AMBA standard interface. While designing the architecture, in order to improve its practicability, a wrapper interface module is developed to enable the VLC hardware to be connected with AHB bus to combine the whole system on an ARM9 integrator platform. And in order to understand the effect of encoding, we also reconstruct the image after encoding by software and finally show the result with a window.
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