

# Low-Power H.264 Video Compression Architectures For Mobile Communication

## Abstract

This paper presents a method to reduce the computation and memory access for variable block size motion estimation (ME) using pixel truncation. Previous work has focused on implementing pixel truncation using a fixed-blocksize ( $16 \times 16$  pixels) ME. However, pixel truncation fails to give satisfactory results for smaller block partitions. In this paper, we analyze the effect of truncating pixels for smaller block partitions and propose a method to improve the frame prediction. Our method is able to reduce the total computation and memory access compared to conventional full-search method without significantly degrading picture quality. With unique data arrangement, the proposed architectures are able to save up to 53% energy compared to the conventional full-search architecture. This makes such architectures attractive for H.264 application in future mobile devices.

## Keywords:

Low-power design

Motion estimation (ME)

Video coding

VLS