

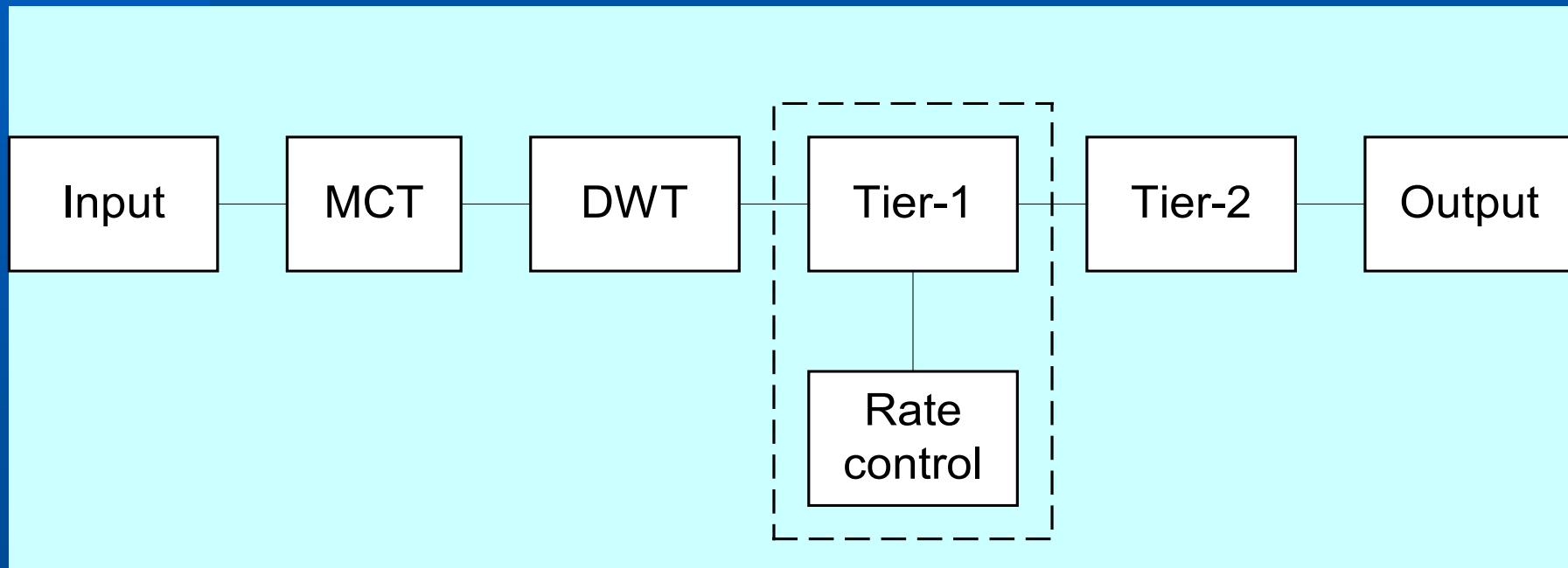
JPEG2000

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JPEG2000 encoder structure



For JPEG, DCT is a suitable block for SIMD (instead of DWT). The DCT is the same as in MPEG.

Key features

- Fully compliant with ISO/IEC 15444-1 JPEG2000 Image Coding Standard:Part 1
- Grayscale and color RGB, YUV 4:4:4, 4:2:2 and 4:2:0 images support
- Includes high performance implementation of both 9-tap/7-tap and 5-tap/3-tap wavelet transforms
- Lossless compression support
- Performance up to 5 Msamples per second (TM1300 180MHz)

Key features

- Optimized memory usage, up to 6 bytes of RAM per tile sample
- Embedded memory management mechanism
- Original high performance rate allocation algorithm works faster on higher ratios
- Two different rate allocation variants: MSE and original
- Large images support
- No floating point usage

Encoder performance

- Alarity J2K Encoder Implementation (TriMedia 1300, 180 MHz):
 - up to 5.2 Mpx/sec for grayscale images
 - up to 1.55 Mpx/sec for color RGB images
 - up to 1.7 Mpx/sec for color YUV 4:4:4 images
 - up to 2.15 Mpx/sec for color YUV 4:2:2 images
 - up to 2.55 Mpx/sec for color YUV 4:2:0 images

JPEG2000 performance aspects

- Two most computation-intensive blocks -- DWT and Arithmetic coder
- DWT optimized for Trimedia 180MHz (2 32-bit mpu):
 - up to 16.7 Mpx/sec for 5-tap/3-tap filter
 - up to 11.5 Mpx/sec for 9-tap/7-tap filter
- Arithmetic coder -- depends on compression ratio (less computations for high compression), generally inherently sequential and cannot take advantage of the SIMD processor