ARMovie Video Codecs

- MovingLines and MovingBlocks codecs; M-JPEG codec under development
- High performance
- Movies play effectively on a wide range of systems
- Small code size (both MovingLines and MovingBlocks decompressors fit into 4K cache)
- Codecs are scalable; as system performance improves, increase your movie resolution
- MovingLines and MovingBlocks produce 15bpp colour output (RGB or YUV colour spaces)
- M-JPEG codec will provide 8bpp greyscale output, or 24bpp colour output
- Codecs can be patched to add colour lookup
- MovingBlocks and MovingLines compressors control quality to maintain constant bandwidth
- MovingBlocks and MovingLines are highly asymmetrical, taking some time to compress frames; video is then played back at 25fps
- The M-JPEG codec is more symmetrical — without motion prediction, the time to compress or decompress a frame is similar to that required to encode it. This makes the codec suitable for real-time compression of video.
- Decompressors can be unplugged from the ARMovie architecture and used separately

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MovingLines Codec

- Spatial and temporal compression
  —looks for sequences of horizontal lines
- Operates well on ARM processors
  —good at compressing large, flat areas
- Small code size, typically 2K for a decompressor
  — fits into 4K cache, so performance is high
- 15bpp RGB and YUV colour spaces

MovingBlocks Codec

- Spatial and temporal compression
- Operates on 4x4 pixel image blocks
- Can produce very high quality results
- Small code size, typically 2K for a decompressor
  — fits into 4K cache, so performance is high
- Higher quality than MovingLines, but needs more CPU power to play movies
- 15bpp RGB and YUV colour spaces.

M-JPEG Codec

- Spatial compression; temporal compression may be added for non-realtime compressor
- Sufficiently fast to compress greyscale images at I2.5fps (160x 128 resolution)
- 8bpp grey and 24bpp colour spaces
- Codec has been used in the ART VideoPhone technology demonstrator
- Makes use of highly optimised ARM assembler forward and reverse DCT and quantisation algorithms, giving high performance

Use of Codecs

All ARMovie decompressors conform to a standard interface, so they can be used by applications which understand the interface.

For instance, an application which wishes to process the contents of a movie file simply needs to load the appropriate frame data for the movie file, and it can then extract frames from the movie by passing data to the decompressor.

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