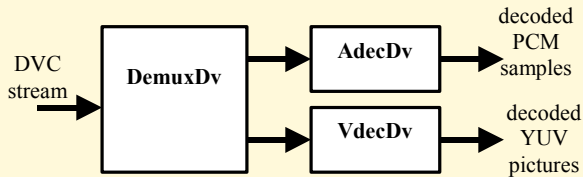**DemuxDv, VdecDv and AdecDv are a set of TSSA libraries to decode 25 Mbps streams from digital video cameras on processors using the TriMedia 32-bit architecture.**

DVC decoder

Features:

- DVP compatible interfaces
- decodes all DV25 streams
- supports trick modes: fast forward, rewind and pause
- video features:

  supports PAL and NTSC

  in PAL mode output is YUV 4:2:0

  in NTSC mode output is YUV 4:2:2, upscaling from 4:1:1 is performed internally

  decoding of Level 2 and 3 Huffman codes can be disabled to save CPU cycles

  decoder can perform embedded resizing to SIF resolution for PIP applications

- audio features:

  performs error correction for missing or corrupted samples

  performs deemphasis

  supports 32kHz, 44.1kHz and 48kHz sampling rates

Description

The three libraries AdecDv, VdecDv, and DemuxDv can be used to build DVC decoding systems. On a chip like pnx8525 a DVC stream can be received through the build in 1394 link layer interface. It can then be demultiplexed by DemuxDv. DemuxDv is connected to the DVC audio decoder, AdecDv, and the DVC video decoder VdecDv.

The audio and video decoder support trick modes (e.g. mute). They react appropriately when the camera switches from single speed regular playback to fast forward, pause, or rewind.

Several methods for graceful degradation are supported in order to adapt the CPU load to levels that allow for running other applications at the same time or to deal with momentary overload situations without dropping frames. The video decoder can skip the decoding of high frequency coeficients and it can perform embedded resizing to SIF resolution.

Applications

- Set Top Boxes with IEEE1394 input
- Digital TVs with IEEE1394 input
- PVRs with transcoding from DVC to MPEG
- PC video editing systems

Documentation

Detailed documents describing the APIs and the internal behaviour of the components are available.

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PHILIPS

DVC decoder

Technical Information

Memory Usage

Component	static memory	dynamic memory
DemuxDv	10,632 bytes	10,224 bytes
VdecDv	79,686 bytes	55,380 bytes
AdecDv	19,745 bytes	10,724 bytes

Note that additional memory is required for buffering of input and output data. Typically four frame buffers are required for the video output connection. The data in the column *dynamic memory* includes the default stack size of the component (currently 10,000 bytes).

Processor Load

This was measured on an MDS IRef board with a 178.75 MHz TM-1300 and 143 MHz SDRAM. The load of VdecDv depends on the contents and the camera type used for the recording. A variation of +/- 5% can be expected.
The SIF columns contain the load of the components for a video decoder configuration in which the embedded resizing feature is enabled.

Component	NTSC D1	NTSC SIF	PAL D1	PAL SIF
DemuxDv	8.6 MIPS	8.5 MIPS	7.7 MIPS	7.4 MIPS
VdecDv	160.3 MIPS	68.0 MIPS	165.0 MIPS	68.0 MIPS
AdecDv	2.7 MIPS	2.3 MIPS	1.9 MIPS	1.9 MIPS

Other Information

Supported Processors	TM-1100, TM-1300, pnx8500, pnx8525
Version	0.7
Built with Compiler Version	V5.7.1 of tcs2.2-dvp0003WinNT

Related TriMedia TSSA Software Components

VrendVo, ArendAo

Example Programs

This library is shipped with one example program:

- exolDemuxDv can be used to play back PAL and NTSC DVC streams from a file. The files can be captured with a 1394 plug in card in a PC. They, however, need to be converted from AVI to raw DVC. Tools for that can be found on several shareware web sites.

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