Video Capturing and Transformation (exolVcodec)

NDK 5.7/MPTK 2.4

Application Note, 12 December 2007

Overview

exolVcodec shows the typical usage of the video digitizer and transformer in the context of a MPEG encoding application. Since MPTK does not ship any MPEG encoder, there is no MPEG encoder included in the TSSA graph of exolVcodec. A customer, who is developing and/or using an encoder, will typically connect the encoder to the output of the video transformer. The output stream of the encoder will then be written to a file. A separate application will be able to read, decode and render the compressed stream. When there are sufficient resources the decoder can also be included in the encoder application.

This user manual describes version 2.0 of exolVcodec.

Description

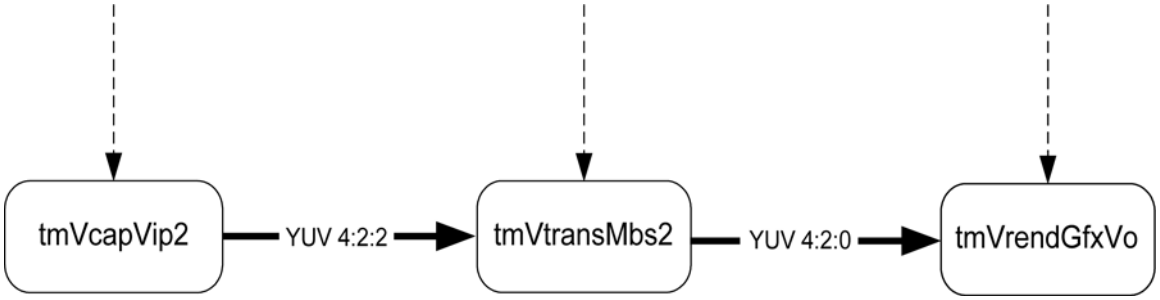

Figure 1: TSSA component graph for exolVcodec

exolVcodec supports the following:

- PAL and NTSC video input and output mode.
- Setting the size of the picture to encode.
- The output format of the video transformer is YUV 4:2:0, a frame per packet. This is the format most encoders require at their input.
- The possibility to deinterlace in case of vertical scaling (i.e. the encoding window height being smaller than the input window height). For example, this is suitable when encoding SIF resolutions.

User interface

exolVcodec can be controlled from command line using the following options.

Command	Description
`-testPattern <test pattern number>`	The test pattern number. ▪ `0` is for board input (actual capturing) ▪ `1` is for test pattern #1 ▪ `2` for test pattern #2 Default is `0`.
`-videoMode <video mode string>`	The video input and output mode; the string as maintained by tmVideoMode. Only `pal` and `ntsc` are supported. Default is `ntsc`.
`-scalingInVip`	If specified, horizontal scaling will be done in the VIP. If not specified, it will be done in the MBS.
`-encodingWindowSize <width> <height>`	The encoding window size, i.e. the size of video signal at the output of the video transformer. The default size is the full size of the video mode.
`-videoOutScalingMode <asIs | fullScreen>`	`asIs` – the renderer will not scale the incoming picture and will center it in the middle of the screen. `fullScreen` – the renderer will scale the image to exactly match the size of the screen. Default is `asIs`.
`-deinterlaceMode <none | median | majority2 | majority3 | majority3enh | majority3dyn | majority3dynenh>`	The deinterlace mode that will be applied by the video transformer. The default is `adaptive`, see the paragraph below.[1]
`-eddiLevel <off|NMCLowNoiseSafe|NmcLowNoiseNormal……>`	The eddi level that will be applied by the video transformer. The default is `adaptive`, see the paragraph below.[1]

[1]When `deinterlace` mode is specified in the command line option, this deinterlace mode (and the possibly specified eddi level) will be applied anyway. When it is not specified and vertical scaling is required, `majority2` and `eddi mc safe` will be applied. If not specified and no vertical scaling is required, deinterlacing and eddi will be turned off.

When deinterlacing is enabled, exolVcodec sets tmVtransMbs2 such that the output of tmVtransMbs2 is 30p i.s.o. 60p (or 25p i.s.o. 50 in case of pal). This is desired when the display deinterlacing typically turns a 60i signal into 60p. But in an encoding situation we do not want to double the rate of the signal so deinterlacing should turn a 60i into 30p. For example, running exolVcodec without arguments captures ntsc from the cvbs adapter, and gives a full resolution (720x480) YUV 4:2:0 signal at the output of the video transformer.

For NTSC SIF, the encoding window should be set to 352x240.

Once capturing/rendering has started, the user has the option to either exit or to print the number of dropped and/or repeated pictures in the capturer and/or renderer.