Subject: MediaPlayer is out
Posted by koldo on Fri, 24 Dec 2010 07:57:02 GMT
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Hello all

Finally it is there . Please follow installing instructions. They are very simple but have to be strictly followed.

It includes MediaPlayer control and a demo. It has been more tested in Windows. A problem in Linux is that ffmpeg Ubuntu packages are very old, and all my efforts to compile from sources have failed.

It uses SDL (SDLCtrl) and ffmpeg:
- SDL gives fast YUV video and audio playing.
- ffmpeg gives audio and video decoding and encoding.

So in summary for playing:
- ffmpeg opens the file (.avi, .mp3, ...)
- ffmpeg reads the codified data and converts it in uncompressed images and audio chunks.
- SDL displays the images and plays the audio fluently.

It uses at least 5 threads... plus the main:
- basic data chunks (called packets) retrieval
- audio decoding
- video decoding
- subtitles decoding
- audio playing

Please try it and give all the feedback. Be as clear as possible, as the threads interaction is not easy.

The next immediate steps from now are:
- Solve problems
- Add RGB video playing to do video processing
- Reduce number of threads... specially video decoding thread has to be removed (it has been the source of many problems)

Other improvements are:
- Add video and audio encoding (to generate new files, .avi. mp3, ...)
- Remove SDL dependencies...:
--- Mirek: To see how to do fast image rendering
--- Honza and Mirek: To play audio with PortAudio

If anybody has any special need, just s/he has to describe it .

Subject: Re: MediaPlayer is out
Posted by dolik.rce on Fri, 24 Dec 2010 12:03:25 GMT
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Hi Koldo,

Wonderful Christmas gift!

I had a quick look at the audio playback part and I think it will be possible (and probably not very hard) to make a switchable PortAudio backend. The architecture is very similar and you already did all the hard work. I think that it will need just a few #defines... I'll have a look at it during the holidays.

Good work

Honza

PS: I'm still thinking do we really need the SDL part? If the audio can be played using PortAudio, couldn't we also display the raw image data using U++ and get rid of the dependency?

Subject: Re: MediaPlayer is out
Posted by jerson on Fri, 24 Dec 2010 13:25:45 GMT
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I am a bit uninitiated, so I do not know how to.

I got the sdl and ffmpeg libraries shown in the links. Do I also need to download the nightly build to get access to the media player etc?

My current build is 2791.

Merry Christmas

Subject: Re: MediaPlayer is out
Posted by dolik.rce on Fri, 24 Dec 2010 14:25:43 GMT
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jerson wrote on Fri, 24 December 2010 14:25I am a bit uninitiated, so I do not know how to.

I got the sdl and ffmpeg libraries shown in the links. Do I also need to download the nightly build to get access to the media player etc?
Hi Jerson,

You need fresh U++ sources, version 2924 or newer. Last nights build is just fine. There is a package MediaPlayer in bazaar. If you have all the libraries, it should compile just fine. Just give it a try with some audio or video files

Honza

Subject: Re: MediaPlayer is out
Posted by koldo on Fri, 24 Dec 2010 16:40:55 GMT
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Quote:PS: I'm still thinking do we really need the SDL part?Yes Honza. One goal is to remove SDL dependencies.

Jerson: The Honza explanation is perfect.

Subject: Re: MediaPlayer is out
Posted by mirek on Fri, 24 Dec 2010 20:37:13 GMT
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koldo wrote on Fri, 24 December 2010 02:57
--- Mirek: To see how to do fast image rendering

Would be SetSurface helpful here?

Subject: Re: MediaPlayer is out
Posted by koldo on Sat, 25 Dec 2010 09:25:41 GMT
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mirek wrote on Fri, 24 December 2010 21:37koldo wrote on Fri, 24 December 2010 02:57
--- Mirek: To see how to do fast image rendering

Would be SetSurface helpful here?
Hello Mirek

Perhaps it is enough. I will add it as a possibility to compare performance. A drawback is that it requires conversion from YUV to RGB. I will dig in it.

Anyway, do you have a sample?

Subject: Re: MediaPlayer is out
Posted by mirek on Sat, 25 Dec 2010 09:55:17 GMT
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Sorry, no sample, but I guess the function singature tells it all

void SetSurface(SystemDraw& w, int x, int y, int cx, int cy, const RGBA *pixels)

YUV->RGB might be a problem. I would even say that a bit of SSE2 code inlines will be necessarry... (Then there are also issues of rescaling... which I am afraid in SW is not fast enough).

Mirek

Subject: Re: MediaPlayer is out
Posted by koldo on Sat, 25 Dec 2010 10:35:20 GMT
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Reference/SetSurface . Sorry, I have got a flu...

Subject: Re: MediaPlayer is out
Posted by koldo on Sat, 25 Dec 2010 19:23:27 GMT
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Hello Honza

Quote:I had a quick look at the audio playback part and I think it will be possible (and probably not very hard) to make a switchable PortAudio backend. The architecture is very similar and you already did all the hard work. I think that it will need just a few #defines... I'll have a look at it during the holidays.
I would not do it switchable . I would just replace SDL audio code with yours using PortAudio. The only problem is MSC.

Subject: Re: MediaPlayer is out
Posted by koldo on Sat, 25 Dec 2010 19:27:00 GMT
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Hello Mirek

Quote:YUV->RGB might be a problem. I would even say that a bit of SSE2 code inlines will be necessary...

Yes, it is possible (I do not say easy) to use hardware acceleration.

An approach would be to use Direct2D or perhaps OpenGL.

Subject: Re: MediaPlayer is out
Posted by koldo on Sat, 25 Dec 2010 19:37:15 GMT
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An explanation:

The advantages of YUV are two:
- Video is usually encoded in YUV so, to show it, convert it to RGB is an additional step.
- An image in YUV is smaller than in RGB.

Subject: Re: MediaPlayer is out
Posted by mirek on Sun, 26 Dec 2010 00:04:31 GMT
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koldo wrote on Sat, 25 December 2010 14:27Hello Mirek

Quote:YUV->RGB might be a problem. I would even say that a bit of SSE2 code inlines will be necessary...

SSE2 is not that hard, really, using intrinsics (which are MSC/GCC compatible).

Subject: Re: MediaPlayer is out
Posted by dolik.rce on Tue, 04 Jan 2011 18:13:19 GMT
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Hello guys,

I learned quite a bit about ffmpeg reading Koldos sources and the documentation on the web (altough it is lacking many important things - almost like U++ docs).

The result of my work in this field is a conclusion that audio/video playback is really possible using only U++ ffmpeg and portaudio. In the attachment you will find a proof of concept video player. It is very simple compared to the one Koldo published, but it is a learning tool for me and as such it is adequate. Its main characteristics are: oversimplified, single threaded, blocking (no UI interaction while playing).

The video display is done using SetSurface, which proved to be fast enough for this purpose (good work, Mirek!). Scaling and YUV->RGBA conversion is done in single step using sws_scale from libsws that comes with ffmpeg. It should use hardware acceleration where available, but on my system everything was done in software. The rescaling uses bilinear algorithm. I tested with bicubic as well but it became very slow for higher resolutions. The audio output is done in the simplest possible way using blocking SoundStream from my Sound package published in bazaar. The blocking nature of the sound API is also misused to provide audio-video syncing. For mute videos there is a quick hack to make Paint() block until it is the right time to output the image.

If you decide to test, I recommend you to try with shorter movies. Once you start it, it runs until the end (or SIGKILL). No seeking, no pause, no interaction while playing. This should be actually easy to fix using threads and some pieces of code from Koldo.

I tested this on my Intel Atom netbook, i.e. with no graphics card to speak of. I got fluent playback for most of the movies on my hard-drive, but didn't test any HD clips. Actually the slowest part is the resizing, so if the HD resolution matches with your monitor resolution, it should play fine For me there were some sound buffer underflows when playing better quality movies on fullscreen (1024x600), but playing them in native resolution was fine.

I left few RTIMING macros in the code so you can make your idea about how fast each part of processing is Generally speaking audio decoding is very fast, SetSurface scales linearly with size but the scaling can do weird thing depending on the size and on original resolution.

So to sum it up: ffmpeg+portaudio+U++ is a combination sufficient to do most of the common video processing and SDL dependency will most definitely be dropped soon. Which is IMHO great news

Best regards,
Honza

Subject: Re: MediaPlayer is out
Posted by dolik.rce on Tue, 04 Jan 2011 18:13:19 GMT
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EDIT: Deleted accidental double post...

Subject: Re: MediaPlayer is out
Posted by koldo on Wed, 05 Jan 2011 09:06:43 GMT
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Hello Honza

This post is about MediaPlayer. If you want to do other things please open a new post.

I do not understand you: I informed many months ago about this project and its advance. I

One week ago we chatted in ICQ about it and I opened the package to you, to do a join effort. Now you break your word and do it by yourself without any previous comment. For me it is dishonest, it is a backstab.

It is true anybody can take, lets say, all U++ project and open tomorrow a new project in Sourceforge, a new web page, change a few things including the name and logo, and begin a new

project. It is legal. The license permits it. It is called fork. But if there is no previous provocation and if the original project has been fair and all project contributors have had opportunities proportional to their effort, to open a fork is not fair.

For sure I am of the old school. But if U++ project acts this way I do not want to be here.

Subject: Re: MediaPlayer is out
Posted by koldo on Wed, 05 Jan 2011 09:14:18 GMT
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Hello all

Now MediaPlayer control can manage video image as RGB. It means that programmer can easily process the image. It is explained here.

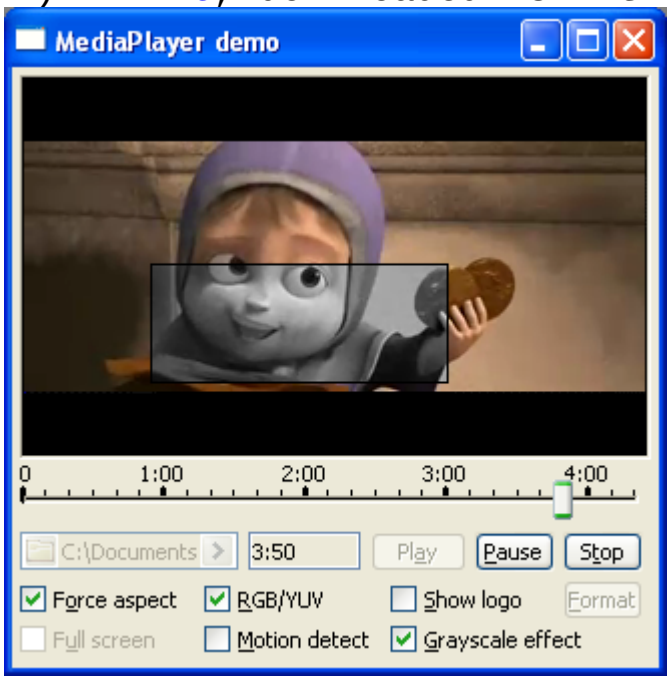
To show this MediaPlayer packages includes demos to set a logo over the live video, to detect motion in image and to set to grayscale a moving rectangle in the image.

It is easy to handle through callback function WhenFrame(SDLSurface &surface), called every time a video frame is displayed. And the examples are very simple.

Just a sample:

File Attachments

1) BW.PNG, downloaded 1317 times



Subject: Re: MediaPlayer is out
Posted by dolik.rce on Wed, 05 Jan 2011 10:28:59 GMT
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koldo wrote on Wed, 05 January 2011 10:06Hello Honza

This post is about MediaPlayer. If you want to do other things please open a new post.

I do not understand you: I informed many months ago about this project and its advance. I

One week ago we chatted in ICQ about it and I opened the package to you, to do a join effort. Now you break your word and do it by yourself without any previous comment. For me it is dishonest, it is a backstab.

It is true anybody can take, lets say, all U++ project and open tomorrow a new project in Sourceforge, a new web page, change a few things including the name and logo, and begin a new project. It is legal. The license permits it. It is called fork. But if there is no previous provocation and if the original project has been fair and all project contributors have had opportunities proportional to their effort, to open a fork is not fair.

For sure I am of the old school. But if U++ project acts this way I do not want to be here.

Hi Koldo,

Please don't get me wrong. The package I posted here definitely does not focus on the same things as the MediaPlayer and I did not have any intentions to steal your credit.

The purpose why I did this was to learn better the ffmpeg internals to be able to help you with the portaudio sound, just as we talked about. I was also interested in the possibilities of SetSurface, as it would allow to drop SDL completely, which we agreed to be a worthy goal. So that is a reason why I didn't concentrate only on audio but also put in the video part. Working directly on your sources was just too difficult for me to begin with, so I decided to create the simplest possible implementation to learn how the things work.

I wouldn't call this fork. Yes, I was partly inspired by parts of your code, but the main part was based on an ffmpeg example source (about saving video frames to picture files). The whole thing is a stub, mere learning tool or demo, not suitable for use for any other purpose. I was hoping that you would look at it and reuse (or just get inspired by) the important parts, that is the audio output and sws_scale&SetSurface usage.

I believe this is just misunderstanding and that you will understand my reasons and intentions now.

Best regards,
Honza

Subject: Re: MediaPlayer is out
Posted by Zbych on Thu, 06 Jan 2011 15:20:10 GMT
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Hello Koldo,

I've just tried your MP on ubuntu (10.10) and ffmpeg from svn. There were few compilation/linking errors I had to correct:
- multiple definitions of av_free_packet, av_get_codec_tag_string, avsubtitle_free. I think that those functions should stay in their original location (libavcodec/utils.c etc.)
- alsa is enabled by default in ffmpeg, so maybe asound library should be added to link libraries in media package?
- by default libavcodec/audioconvert.h and libavutil/colorspace.h are not copied to include directory (/usr/local/include). Are you sure you can use them outside ffmpeg?

MP crushes when movie is playing and I try to resize the window. If I resize window and then pres play, movie is played, but it stops after few seconds.

Subject: Re: MediaPlayer is out
Posted by koldo on Thu, 13 Jan 2011 08:20:10 GMT
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Zbych wrote on Thu, 06 January 2011 16:20Hello Koldo,

I've just tried your MP on ubuntu (10.10) and ffmpeg from svn. There were few compilation/linking errors I had to correct:
- multiple definitions of av_free_packet, av_get_codec_tag_string, avsubtitle_free. I think that those functions should stay in their original location (libavcodec/utils.c etc.)
- alsa is enabled by default in ffmpeg, so maybe asound library should be added to link libraries in media package?
- by default libavcodec/audioconvert.h and libavutil/colorspace.h are not copied to include directory (/usr/local/include). Are you sure you can use them outside ffmpeg?

MP crushes when movie is playing and I try to resize the window. If I resize window and then pres play, movie is played, but it stops after few seconds.

Hello Zbych

Thank you, I will check it all.

Subject: Re: MediaPlayer is out
Posted by koldo on Thu, 13 Jan 2011 08:21:02 GMT
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Some comments have been moved here