twam.info

My computer, physics, electronics & photography blog

v4l2grab – Grabbing JPEGs from V4L2 devices

Posted on April 23, 2009

A friend of mine, wanted to use a standard USB WebCam as an IPCam. He used an old Media-Receiver Box (T-Online S100) and installed Gentoo Linux on an CF Card.

Since Kernel 2.6.27 most of the USB webcams are supported through the Linux UVC drivers, which provides an Video4Linux2 Interface to those cams. We found some programs who claimed being able to grab JPEG images from V4L2 Cams, but most of them either didn't compile, supported only V4L Version 1 or just brought up some other errors.

So I checked up the Video for Linux Two API Specification and found there in Appendix B a small sample of howto communicate with the Cam. I adapted it to our needs and included an converter from YUV colorspace to RGB. Finally I added some code to support the export of JPEG images.

You can download it here: v4l2grab Version 0.1

The whole program is written in C and only needs libjpeg to compile. There are different ways to communicate with the camera, if you want to support all, you should go best with:

```
gcc v4l2grab.c -o v4l2grab -Wall -ljpeg -DIO_READ -DIO_MMAP -DIO_USERPTR
```

If you compiled the program, you can get some images with:

```
./v4l2grab -o image.jpg
```

With -W width -H height its possible to adjust the size of the image. If the camera doesn't support the resolution the programs adjusts it automatically and prints an information on stderr.

The current version of V4L2grab can be found on [github](#).

This entry was posted in [Linux](#), [Software](#) and tagged [V4L2](#), [WebCam](#) by [twam](#). Bookmark the [permalink](#) [http://www.twam.info/linux/v4l2grab-grabbing-jpegs-from-v4l2-devices] .

About the author

My name is Tobias Müller and I'm currently working on my PhD in theoretical astrophysics. I'm interested in computers, physics, electronics and photography. [more …](#)

| | 3 | Tweet | *Pin it* | 0 |

36 THOUGHTS ON "V4L2GRAB – GRABBING JPEGS FROM V4L2 DEVICES"

Roby
on [October 2, 2010 at 19:00](#) said:

I'm trying to use a webcam in V4L2_PIX_FMT_MJPEG format (not V4L2_PIX_FMT_YUYV) and grab image into jpeg files, some ideas on how do it?

Frank
on July 13, 2011 at 19:25 said:

Hoi,

Great work! It would be a good idea to add the compile statement to the readme file on github.
Works like a charm!

Groeten,
Frank.

Jemiah
on July 19, 2011 at 16:37 said:

I just built this for the DM3730 Logic SOM running Linux built from the 2.6.32 OMAP PSP_03.00.01.06 kernel from TI. I used libjpeg62-dev. Worked right out of the box. Great work.

Thanks,
Jemiah

.

tommy liu

on August 17, 2011 at 04:50 said:

I was running v4l2grab on ARM with logitech C200.

Even set the format by using VIDIOC_S_FMT, I still get 176×144 size of image.

I saw the notes in source as follow:

'Note VIDIOC_S_FMT may change width and height.'

Could you please share the more detail about this?

Anders
on October 4, 2011 at 11:17 said:

Hi,

I'm trying to compile v4l2grab for an ARM processor and can see that some of you have already succeded in that. Could you please give me a step by step guide on how to accomplish this task? Thanks in advanced

/Anders

Alexw
on October 28, 2011 at 11:56 said:

@Anders

On v5l ARM machine I have no compilation issue:

```
gcc v4l2grab.c -o v4l2grab -Wall -ljpeg -DIO_READ -DIO_MMAP -DIO_USERPTR
```

Jonathan Andrews
on February 4, 2012 at 18:17 said:

This is a very useful little utility, nice code, but has a stutter.

I've added some debugging text

```
static void imageProcess(const void* p)
{
        unsigned char* src = (unsigned char*)p;
        unsigned char* dst = malloc(width*height*3*sizeof(char));

        // convert from YUV422 to RGB888
printf("Munge\n"); fflush(stdout);
        YUV422toRGB888(width,height,src,dst);

        // write jpeg
printf("Write\n"); fflush(stdout);
        jpegWrite(dst);

        // free temporary image
        free(dst);
}



# ./v4l2grab -m -o test.jpg
1Open
Init
```

```
Start
Frameread
Frameread
Munge
Write
Frameread
Munge
Write
```

Should it not read a frame once, process it once, and write t once ? 😃

Thanks,
Jon

---

twam
on February 6, 2012 at 15:57 said:

> **Jonathan Andrews:**
>
> *Should it not read a frame once, process it once, and write t once ?*

The program is reading the frame again, when the read returned an EAGAIN error.

Franz
on February 15, 2012 at 17:33 said:

Hallo Tobias,

super kleines Tool. Genau was ich gerade gesucht habe, um nicht mit Kanonen auf Spatzen zu schiessen.
Runter laden, übersetzen und laufen lassen. Ohne Fehler; einfach so !!!

Vielen Dank
Franz

Franz
on February 15, 2012 at 17:37 said:

Was ich vergessen habe:

I use OpenSuse 12.1 (64 Bit) on AMD Quadcore 2,9 Ghz with USB – Logitech, Inc. Webcam C270 .

Thanks
Franz

vijay
on April 19, 2012 at 06:39 said:

/tmp/cc6gk2Pb.o: In function `imageProcess':
v4l2grab.c:(.text+0×258): undefined reference to `YUV422toRGB888'
collect2: ld returned 1 exit status

i am getting this error when i compile the programme
please help to fix this problem

twam
on April 19, 2012 at 09:49 said:

@vijay
It look like you tried to compile it with the line given in the post above. The latest version supplies a makefile, so you just have to run 'make' to compile the program.

soda
on May 18, 2012 at 08:51 said:

Thanks for sharing this example, it was very helpful! Moreover, work out of the box 😊 Thanks again Tobias.

Owen
on May 18, 2012 at 20:06 said:

This runs without error:
gcc v4l2grab.c -o v4l2grab -Wall -ljpeg -DIO_READ -DIO_MMAP -DIO_USERPTR

But I am getting a "select timeout" error when I run the following (on a BeagleBone Armv7 processor)

```
# ./v4l2grab -o image.jpg
```

twam
on May 20, 2012 at 11:34 said:

@Owen

Did you try the latest version from github? Because this you would have to compile using its makefile.

Owen
on May 23, 2012 at 15:48 said:

@twam The latest version from Github gives me the following error:

```
# make
gcc v4l2grab.c -c -Wall -march=native -Werror
cc1: error: bad value (native) for -march switch
make: *** [v4l2grab.o] Error 1
```

twam
on May 23, 2012 at 20:17 said:

@Owen

Just try to remove the -march=native inside the makefile as this might be not support on old gcc versions.

Owen
on May 24, 2012 at 02:45 said:

@twam I was able to compile and run ./v4l2grab -o image.jpg without errors but I can't seem to locate any produced image files.

halo
on August 28, 2012 at 22:13 said:

How can I install the libjpeg?

twam
on August 29, 2012 at 10:13 said:

@halo
You can either use the packet manager of your distribution or download it from the project page and compile/install it manually.

halo

on August 29, 2012 at 22:22 said:

hi again.

I believe to compile libjped. the screen gave this message

```
halil@toshiba:~/İndirilenler/jpeg-8d$ ./configure
checking build system type... i686-pc-linux-gnu
[...]
config.status: executing libtool commands
```

But I tried to work gcc v4l2grab.c -o v4l2grab -Wall -ljpeg -DIO_READ -DIO_MMAP -DIO_USERPTR and I gave this error message

```
v4l2grab.c:26:2: error: #error You have to include one of IO_READ, IO_MMAP oder IO_USERPTR
v4l2grab.c:45:21: error: jpeglib.h: Böyle bir dosya ya da dizin yok
[...]
```
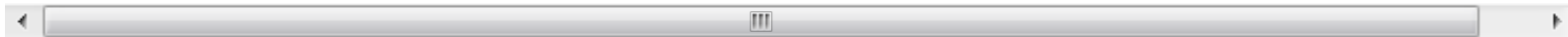
Can you help me about this issue. what do I do? thanks you for your helps

twam
on September 3, 2012 at 21:38 said:

@halo

After running configure, you usually need to run make; make install. Detailed information should be found in the README.

But you should think of installing it through your distributions package manager. There should be something like a libjpeg-dev

package.

Jedisun
on January 9, 2013 at 08:54 said:

Hi @twan,

I compiled this app successful, and when I ran it with

./v4l2grab -d /dev/video0 -o out.jpg

and the only thing I'v got is

Using pixel format V4L2_PIX_FMT_YUYV.

and no any output images. Can you please help me out here? Thx.

twam
on January 9, 2013 at 10:03 said:

@Jedisun

No other output at all? If the program cannot write to the output there should be an error output.

Jedisun
on January 9, 2013 at 10:41 said:

@twam

No other ouput, and the app is pending so I have to use ctrl-c to exit.

twam
on January 9, 2013 at 10:43 said:

@Jedisun
Then the app is waiting for images from the webcam. Do you get images from the webcam in other apps thru the v4l2 API, e.g. mplayer?

Jedisun
on January 9, 2013 at 10:48 said:

@twam
so I guess the app wouldn't ask for video data from driver right?

Yangpu
on January 18, 2013 at 10:40 said:

One error is caught:
Pixel format V4L2_PIX_FMT_JPEG not supported!

How to grab a JPEG frame from a usb camera with V4L2_PIX_FMT_JPEG support only?

twam
on January 18, 2013 at 10:41 said:

@Yangpu
You would have to implement the function capable of reading the format. As my cameras doesn't support this format, I'm not able to try this 😔

Keybo
on January 28, 2013 at 02:09 said:

HI,

Thanks for sharing!
I'm a beginner on Linux and we need our camera to take pictures for our project.
I am using a beagleboard xM that runs Angstrom with kernel 2.6.32.
I first installed libjpeg using tarbal from their website. And then i tired your v0.1 and latest version from github; both of them were built fine but when i run them they give:
./v4l2grab: error while loading shared libraries: libjpeg.so.9: cannot open shared object file: No such file or directory

Any idea?

Your help is very much appreciated!!

twam

on January 28, 2013 at 10:03 said:

You can run

```
ldd v4l2grab
```

to see against with librarys your program is linked. You should something like

```
        linux-vdso.so.1 =>  (0x00007fff70185000)
        libjpeg.so.8 => /usr/lib/x86_64-linux-gnu/libjpeg.so.8 (0x00007f063071000
  0)
        libc.so.6 => /lib/x86_64-linux-gnu/libc.so.6 (0x00007f0630351000)
        /lib64/ld-linux-x86-64.so.2 (0x00007f0630984000)
```

If libjpeg.so.* is not found, check that the file is one of your lib directories or set LD_LIBRARY_PATH accordingly. Maybe you forgot an make install as root after compiling your libjpeg.

Keybo
on January 28, 2013 at 23:48 said:

Hi,

Thanks alot for your fast reply!
I did check with "ldd" and yes it says " libjpeg.so.9 => not found"
However, when I do "ls /usr/local/lib", the libjpeg.so* files are there...

So i copied the lbjpeg.so.9 from /usr/local/lib to /lib and now v4l2Grab works.

However, when I call imgcmp, which is a part of jasPer and that it seems to require libjpeg at runtime, it

prompts" JPEG decoder not available"….and asks me to install libjpeg…

I did "ldd imgcmp" and it says:

libm.so.6 => /lib/libm.so.6 (0×40026000)

libgcc_s.so.1 => /lib/libgcc_s.so.1 (0×40099000)

libc.so.6 => /lib/libc.so.6 (0x400ab000)

/lib/ld-linux.so.3 (0×40000000)

Which seems to say that all needed .so files are in /lib…

I don't know whats going on…

Thanks,

Rob Kleissen
on February 6, 2013 at 09:46 said:

Hi Tobias,

thanks for posting the code. I confirm that the code compiles flawlessly and works on my Debian Squeeze system. I was able to capture images at the highest possible resolution (2592 x 1944 pixes) from a Logitech C-910 webcam.

Cheers, Rob

Scottie
on March 10, 2013 at 02:22 said:

Thanks – works well on my Raspberry Pi running Archlinux.

Scottie
on March 10, 2013 at 03:03 said:

I should add that I compiled v0.1. Version 0.3 from the github complains that libv4l2.h is missing

twam
on March 10, 2013 at 10:22 said:

The latest version (0.4.1) should be noticeable faster, when you want to grab many pictures.

When you found out, how the corresponding packages you need are installed on Arch Linux, please add them to the Installation instructions.