Coriander 2.0.0-20060113 Usage Guide (York U)

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Introduction (from http://damien.douxchamps.net/ieee1394/coriander/)

Coriander is the Linux graphical user interface (GUI) for controlling a Digital Camera through the IEEE1394 bus (aka FireWire, or iLink). Coriander is full featured and besides changing the parameters of the camera it will also let you record video, send images to an FTP site, convert the video to a V4L stream,... A live display is of course provided too. Best of all, Coriander will work with any camera that is compatible with the <u>IIDC</u> <u>specifications</u> [http://damien.douxchamps.net/ieee1394/iidc/] (also known as DCAM specs). This includes most 1394 webcams and a majority of industrial or scientific cameras too. However, **any cameras in which you can insert a video tape (camcorders,...) will NOT work with coriander.** These cameras record compressed DV video on the tape, while the IIDC specify uncompressed, on-the-fly video flows. If you wish to use a camcorder you should have a look at <u>Kino</u> [http://www.sf.net/projects/kino] instead.

Coriander is regularly used in York University's Vision Lab and Undergraduate Robotics Lab to capture video for image processing and analysis.

To run coriander from PRISM robotics lab:

- 1) Make sure the camera is plugged in properly to the firewire port
- 2) Open up a terminal/shell session.
- 3) [Optional] switch to default directory where you want files saved
- 4) Type "reset_camera"
- 5) Type "coriander &" [alternatively, if path is not set, "/cs/local/bin/coriander &"]

You will see a window pop up looking similar to this (if not, then either there is a problem with the camera connection, or you need to reboot the system):

N	Coriander 2.0.1	+ _ □ ×
<u>F</u> ile		<u>H</u> elp
Camera Services 0	Controls Tools	
Camera Select		
Imaging Source D	Bx 31AF03	[\$
Power	Memory channels	Global Iso Control
	FF Factory	START STOP
∂ RESET	LOAD SA	WE RESTART
Camera informati	on	
Vendor:	Imaging Source	
Model:	DBx 31AF03	
GUID:	0x000748-130195e2ba /	0
Name:	Imaging Source DBx 31AF0)3
IIDC specs:	1.30 ISO	Channel: N/A
Port / Node / Gen:	0 / 0 / 49	
Extras Broadcast		

Using coriander:

When coriander loads, you'll notice a lot of information and controls in the window; most of it is not needed under usual circumstances.

At the very top, there is a set of tabs containing "Camera", "Services", "Controls", "Tools". (We will call this the "Main Tabset."

Pretty much everything you need is in the "Services" tab. When you click on it, you will see the following:

1			
<u>F</u> ile	<u>F</u> ile <u>H</u> elp		
Camera Services Controls	Tools		
🚽 Receive 💽 Displa	ay 🔚 Save 😰	V4L 🐺 FTP	Switch
Receive Display	/ Save V	/4L FTP	Setup
Format Format_1, Mode_3: 1024	x768 YUV (4:2:2)	[\$]	
	Trigger	Options	
RESTART	N/A +	RGGB ÷	
400 Mbps 🛛 🖨	3.75 fps	No Stereo 🗧	
🗌 B mode	Count : 0	BPP : 8 *	
Sync'ed pipe	N/A		
Capture options DMA ring buffer size: 10			

Firstly, you will notice that the "Services" tab has 2 sections (marked as red above): "

1) "Switch"

2) "Setup"

and within "Setup", there is a set of tabs containing "Receive", "Display", "Save", "V4L" and "FTP". (We will call this the "Setup Tabset."

There are a few things that need to happen to get the camera set up and running:

1) Make sure the "Setup Tabset" is on "Receive"

2) Select the camera Format from the pulldown menu; depending on the camera, there will be options to select various resolutions and colourspaces. In most cases you will want **1024x768 Mono 8bpp**.

Once these options are set, your screen should now look something like this:

N	Coriander 2.0.1	L	↑ _ □ ×		
<u>F</u> ile			<u>H</u> elp		
Camera Services Control	ls Tools				
Receive Disp	olay 🔚 Sav	e 🔯 V4L	🖓 FTP		
Receive Displa	ay Save	V4L	FTP		
Format					
Format_1, Mode_5: 102	4x768 Mono 8bp	р	[\$		
ISO Control	ISO Control Trigger Options				
START STOP	External	Polarity No B	ayer 🗘		
RESTART	N/A	¢ RGG	в		
400 Mbps 🛛 🗘	3.75 fps	¢ No S	tereo 🛛 🌲		
🗌 B mode	Count : 0	.≜ ▼ BP	P: 8 +		
Sync'ed pipe	N/A	\$			
Capture options DMA ring buffer size: 10 + frames					

Now that everything is setup, you will need to enable the camera. To do this, ensure that the "ISO Control" is running, if the option is available, click "START" under "ISO Control", if not, then it is most likely already enabled (or you may need a reboot).

When ISO is enabled, you will see the "START" button go grey, and the "STOP" button enabled. This is indicative that things are running properly (so far).

ISO Control			
⊳ START	□ STOP		
∂ RESTART			
400 Mbps			
🗌 B mode			
Sync'ed pipe			

Next, under the "Switch" section, click on "Receive"

You will see that under the "Receive" button there is a number. This is the number of frames per second that are successfully captured from the camera.

N.	Coriander 2.0.	1		↑ _ □ X		
<u>F</u> ile				<u>H</u> elp		
Camera Services Contro	ls Tools					
Receive Display Save 😰 V4L 🖾 FTP						
Receive Displa	Receive Display Save V4L FTP					
Format Format_1, Mode_5: 102	Format Format_1, Mode_5: 1024x768 Mono 8bpp					
ISO Control	Trigger		Options			
START STOP	External	Polarity	No Bayer	· [\$		
RESTART	N/A	÷	RGGB	\$		
400 Mbps 🛛 🌲	3.75 fps		No Stere	0 \$		
B mode	Count : 0	4 7	BPP :	8 *		
Sync'ed pipe	N/A	\$				
Capture options DMA ring buffer size: 10 Image: The second seco						

At this point, you can skip to saving images, however, most people will want to view what they are saving. To display the live video, click on the "Display" button under "Switch". You will notice a window pop up with the live video:



You will also notice (similar to "Receive") that the number of frames per second is displayed underneath the "Display" button.

You can move and resize the live video window to your liking; this will not effect what is saved.

To save video: first, you will need to click the "Save" tab in the Setup Tabset (NOT the button on top)

You will see something	that looks like this:
------------------------	-----------------------

1	Coriander 2.0.1	↑ _ □ X			
<u>F</u> ile		<u>H</u> elp			
Camera Se	rvices Controls Tools				
Receive	e Display 🔚 Save 🗐 V4L	🖓 FTP			
3.751	3.751				
Receive	Display Save V4L	FTP			
Filename					
Base:	myfile	▼ <u>B</u> rowse			
Append:	number 🗘 🗘 Save to a direc	tory			
Format:	ppm/pgm 🗘 🗘 Output to STD	оит			
Filename:	Filename: myfile-frame_number.ppm				
Frame drop Save every 1 * frame(s)					
Use RAI	M buffering Buffer size [MB]; 100	malloc test			

First, select the format you want to save in using the "Format" pulldown. In most cases you will use either "ppm/pgm" (for saving multiple bitmapped images; ppm = colour, pgm = greyscale) [see: <u>http://netpbm.sourceforge.net/doc/ppm.html</u> or <u>http://netpbm.sourceforge.net/doc/pgm.html</u> for specifications] or "pvn" (for saving bitmapped video) [see: <u>http://www.cse.yorku.ca/~jgryn/research/pvnspecs.html</u> for specifications].

Next, choose what to append to the filename. If you select "number", the image filenames will be given sequence numbers; if you select "date and time", the image filenames will be given timestamps; if you select "none (overwrite)", the filename will be exactly as you specify, and, if you are selecting a "still" image format, the file will be overwritten at each frame, giving you only a single frame of data to work with.

Finally, select the "Base" of the file (the example above we gave myfile.pgm); the resulting filenames (in our example) will be myfile-000000000.pgm, myfile-0000000001.pgm, ..., etc.

If you wish to use it, there is an option, if the frame rate is too high, to save every *nth* frame by setting the "Save every .. frame(s)" in the "Frame drop" section.

(If you select a video file format, you will have the option to set a RAM buffer which will ensure frames aren't dropped due to slow disk access, if this is enabled, once the RAM buffer is filled up, the system will cease to save)

Once that is all setup, when you are ready to begin saving video click the "Save" button under "Switch"

6	Cor	iander 2.0.1		↑ _ □ ×
<u>F</u> ile				<u>H</u> elp
Camera Se	rvices Controls 1	ools		
Receive	e 💽 💌 Display	ave 🔚	🖻 V4L	🖓 FTP
3.751	3.751	3.751		
Receive	Display	Save	V4L	FTP
Filename			·	
Base:	/cse/home/paria/TA	_vision/lab01/my	/file	▼ <u>B</u> rowse
Append:	number	[‡	Save to a direc	tory
Format:	ppm/pgm	[‡	Output to STD	OUT
Filename:	/cse/home/paria/TA	vision/lab01/my	file-frame_numbe	er.ppm
Frame drop Save every 1 * frame(s) RAM buffering Use RAM buffering Buffer size [MB]: 100 * malloc test				

Again, you will notice displayed underneath the "Save" button, the actual frames per second being saved. When you are done saving the video, click the "Save" button again to stop.

Once you are complete, there is no need to do anything further; you can now close coriander and move on to processing your imagery.

If you would like to set some of the camera controls, they can be done via the "Controls" tab from the Main Tabset. This will not be described in detail here, as many of the options are self-explanatory.

8	(oriander 2.0.1	↑ _	□ ×
<u>F</u> ile				<u>H</u> elp
Camera Service	s Controls	Tools		
Brightness	Man 🗘		0	*
Auto exposure	Man		800	*
White balance	Auto	Blue/U	0	* *
		Red/V	0	* *
Hue	Man		180	*
Saturation	Man		127	▲ ▼
Gamma	Man		10	▲ ▼
Shutter	Auto		29	* *
		0.03368300 s		
Gain	Auto		300	* *