Making a primitive Thermal Imaging camera

Posted by crystalcross - 21 Feb 2011 03:16

While looking for some thermal imaging equiptment (FLIR) I happen to run across a few articles which claim to be able to convert a standard camera into a thermal imaging photography camera.

With some additional software to do image colorization it may be interesting to try during an investigation.

Please be forewarned I HAVE NOT TRIED THIS YET so use with caution and don't try it with a new or high value camera. I may find an old camera and give it a shot. Also it MUST be a CCD camera, can not be older CMos camera. If you're not sure what yours is, look up the specs on the manufacturer website.

E-How article on how to make a Thermal Imaging Camera.

Article with pictures on how to convert a camera.

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Re: Making a primitive Thermal Imaging camera

Posted by crystalcross - 24 Feb 2011 03:57

I guess nobody has tried this yet. I looked at one of my micro cameras and noticed the blue Infrared filter over the lens. So I take the plunge this weekend and take apart my older Olympus 2 MP camera.

Only problem is, it does not do video but rather only still photos.

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Re: Making a primitive Thermal Imaging camera

Posted by crystalcross - 06 Mar 2011 23:13

Just an update on this topic. So here I go setting out to take apart an old Minolta DiImage 5 3mp camera that my girlfriend found at a thrift shop for $10.00. I go online to search for instructions for disassembly when in my search I find (much to my surprise) that the DiImage5 (or DiImage7) are one of a few cameras which area already capable of taking photographs in the IR spectrum.

So then I go on to read more. After reading from several websites, I learned that the only thing that is needed for that camera is an IR filter (a filter which removes everything but the infra-red non-visible light) which is made for a 49mm adapter.

So my next stop is E-Bay. I look and find that filters are available in 720, 850, 950, and 1000nm. Ok, great what the heck does that mean. Back to reading!

So I read on to find that visible light stops at 700nm (wavelength). The lower the frequency the larger the wavelength. So the higher numbers mean even lower frequency light. Since 700 is the lowest frequency the eye can see, I determine I want a number bigger! So, I'm getting some 950nm filters from China. Who-hoo! Here we go!

900nm is the frequency of heat, thus thermal. So I'm hoping that once the filter arrives I'll have a nice functional infra red camera. I want only heat. Of course the pictures will be black and white, but I can then create some standards so I can colorize the shades of white to show thermal temperature.

Will keep you informed. In the meantime you may want to check your local Thrift shops for some Minolta DiImage 5 or Minolta DiImage 7 cameras. Old but still good!

Good luck!

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Re: Making a primitive Thermal Imaging camera

Posted by Chuckdaddy - 08 Mar 2011 02:53

Hello,

How is the project coming? I'm interested in your outcome.

My on and myself built an IR booster a couple of weeks ago. It was a cheap and easy father son gig.

Anyway my son's cell phone was able to use the ir light and we took some pictures in a completely dark room.

I'm hoping to use the booster when I get a hanycam.

Anyway. keep us posted. I like to tinker around and this sounds doable.

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Re: Making a primitive Thermal Imaging camera
Posted by crystalcross - 08 Mar 2011 03:13

I'm glad you asked. I'm going to have to look for a different camera. Apparently the Minolta DiMage 5 I was testing with already had the IR filter removed. So there was nothing to remove on that one.

I ordered some 49mm IR pass filters and it should take a few weeks for them to get here.

I also have a cheap $9 key-chain camera. That has a CCD camera built in. I'm going to work on using it next. It has fairly good resolution. One thing I found is that if its a glass IR filter, you can't simply remove it. You must replace it with an equally thick piece of glass else the focus gets distorted.

I'm curious how you added your booster. Did you use a night vision scope?

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Re: Making a primitive Thermal Imaging camera
Posted by Chuckdaddy - 08 Mar 2011 19:39

I'm curious how you added your booster. Did you use a night vision scope?

It is it's own self contained unit that is powered by a 9v battery. It can be mounted or handheld. There was no need for a night vision scope. Most cameras have the ability to see some part of the IR spectrum.

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Re: Making a primitive Thermal Imaging camera
Posted by crystalcross - 08 Mar 2011 21:57

Chuckdaddy wrote:

It is it's own self contained unit that is powered by a 9v battery. It can be mounted or handheld. There was no need for a night vision scope. Most cameras have the ability to see some part of the IR spectrum.

Very interesting, do you have some pictures you could upload. I would very much love to see it.

As for cameras and IR. Yes that's true but many newer cameras have a specific filter to filter out the IR spectrum because it tends to discolor the pictures. I've seen some examples of IR photography and even just as pictures they are very unique and beautiful. It tends to look like living creates are glowing. There are some spectacular IR images on the web.

But for my purpose I am looking for a wavelength larger than 950nm. I want to show heat differences, and they tend to be in the lower frequency (longer wavelength) range.

Which brings up a separate point all together. I'm wondering if ghosts or paranormal entities would leave any interference in the VLF (Very Low Frequency) range. And if a set (3) of VLF detectors in a house would give any kind of reading.

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Re: Making a primitive Thermal Imaging camera
Posted by Chuckdaddy - 23 Mar 2011 16:00

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Hey CC how's the IR project progressing? I finally have pictures to upload of the IR booster I built. I'll try to get them up tonight.

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Re: Making a primitive Thermal Imaging camera
Posted by crystalcross - 23 Mar 2011 23:49

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Chuckdaddy wrote:

Hey CC how's the IR project progressing?

Well as I mentioned I found that the camera that I had, DiMage 5 by Minolta is already capable of IR images. So I'm still waiting to get a cheap camera in which I can take apart. I recently got some Filters for IR, which I'll be trying shortly.

Look forward to seeing your project as well.

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Re: Making a primitive Thermal Imaging camera
Posted by crystalcross - 23 Apr 2011 04:36

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So, folks. Sorry about the delay in trying this but I finally found a camera I didn't mind ruining to try this with. Actually I ended up using an old Creative labs webcam from my laptop. The camera had poor quality images, mainly because it required heavy lighting for it to work.

Here is a picture of the webcam. I'm sure you've seen these.

At first it took a bit of doing to take it apart, I found a screw underneath the label at the clip. This screw allowed the clip to separate and then take it apart. Once that was off, the rest of the camera split into two pieces. I was able to remove one more screw, take the electronics out. And finally that exposed the little lens ring which you see from the front. Inside there I saw the Infra-Red filter seen below.

I simply pulled it out. Had to remove some rubber rings which held it all together including the actual lens. Took the filter out, and placed the rest back together. Put it all back in the plastic case and closed it up.

Well a few things happened.

#1 - I lost the color capabilities. Which really is fine since they never really worked in the first place. This is because the colors were no longer balanced and the IR/UV actually caused the color balance to no longer be valid.

#2 - The brightness and contrast even in normal mode dramatically increased. The picture quality got much much better and the camera is actually usable again.

#3 - Finally and best its now a highly sensitive IR camera. I used my TV remote control as a IR "Lamp" and was able to see myself in total darkness. As a matter of fact the TV remote has such a bright IR source that I could see a good portion of the room. I can only image what a real IR source with 15-20 LED's would do. AMAZING!

So this little webcam can now easily be used for night time ghost monitoring.

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