

Re: Color CCD sensor with support hardware wanted

Source: <http://sci.tech-archive.net/Archive/sci.electronics.components/2004-08/0184.html>

From: Roger Hamlett (*rogerspamignored_at_ttelmah.demon.co.uk*)

Date: 08/08/04

Date: Sun, 08 Aug 2004 16:23:17 GMT

"Graham W" <graham@his.com.puter.INVALID> wrote in message
news:41160610\$0\$527\$ed2619ec@ptn-nntp-reader02.plus.net...

>

> "Nautilus" <reply_in_newsgroup_thanks@example.com> wrote in message
> news:6eKdneTIKu-UPojcRVn-tA@comcast.com...

>> On Sun, 8 Aug 2004 04:02:15 +0100, "Graham W"

>> <graham@his.com.puter.INVALID> wrote:

>>

>>> Nautilus wrote:

>>>> On Sat, 07 Aug 2004 09:53:36 GMT, "Roger Hamlett"

>>>> <rogerspamignored@ttelmah.demon.co.uk> wrote:

>>>>

>>>>>

>>>>> "Nautilus" <reply_in_newsgroup_thanks@example.com> wrote in
message

>>>>>> news:4NmdnT_XA6EPxYncRVn-pw@comcast.com...

>>>>>>

>>>>>>> Is there any Color CCD sensor (at least .5 inch square) available

>>>>>>> that's suitable for the hobbyist budget? Hopefully with some

>>>>>>> back-end support electronics so that I can get it to USB or 1394?

>>>>>>> Capture & transfer speed is of no concern.

>>>>>>>

>>>>>>> I see this Sony commercial camera with the kind of 'guts' I want:

>>>>>>> <http://www.sony.net/Products/ISP/products/interface/DFWSX.html>

>>>>>>> but yikes, it's the better part of \$3000!

>>>>>>>

>>>>>>> Thanks...

>>>>>>> The cheapest route, will be a standard digital camera. Something

>>>>>>> like the Canon 300D, since it supports removable lenses, will be

the

>>>>>>> easiest to connect to whatever you want. This sort of camera, sells

>>>>>>> often for less than the bare CCD can be purchased in limited

>>>>>>> quantities, so will always undercut units like 'commercial'

>>>>>>> cameras, which are made for a small market. The CCD you want is

>>>>>>> relatively large (CCD sizes are normally quoted as the diagonal of

> > > > *the chip itself, so a 'half inch' CCD, will typically only be about*
about
> > > > *9 * 7mm). For smaller CCD's, there are routes like wiring a larger*
> > > > *chip, onto a webcam board, but for a unit this large, thge total*
> > > > *cost of this, still runs to about as much as the Canon camera...*
> > > >
> > > > *Best Wishes*
> > > >
> > > >
> > > >
> > > >
> > > > *Thanks, but darn, that puts the kaibash on my plan. Still too*
pricey
> > > > *and since that's a diagonal measurement, it'd still be a bit too*
> > > > *small. I was hoping to scan 16mm film frames in direct contact*
with
> > > > *the sensor, but I'd probably need about 13mm (~1/2") wide sensor*
> *area.*
> > > > *Looks like I'll need to use optics, and I think my bro's MiniDV cam*
> > > > *has a higher-than-video-res still capture mode... that gives me*
> > > > *another idea to play with.*
> > >
> > > *Even if a large CCD were affordable, direct contact is not the way*
> > > *to do it. The cover slip on the CCD has a discrete thickness and*
> > > *then the active surface has coloured dots on it for the RGB pixels.*
> > >
> > > *You'll have to use optics but then a webcam has sufficient resolution*
> > > *these days and also has a focusable lens. Its software will permit*
> > > *the saving to disc of the files.*
> >
> > *About the discrete thickness I think you mean that the image has to be*
> > *focused on the sensor, behind the cover slip & colored dot layers. I*
> > *did wonder about that.*
>
> *Yes, indeed. Any image formed on a plane other than the active*
> *surface of the CCD will not be in focus.*
>
> > *What particular webcam products do you think I should look at?*
> > *There's sooo many junk ones out there that google doesn't help.*
>
> *The Philips ToUCam Pro II is well regarded in astronomy circles.*
> *It isn't the cheapest at around \$100 but has a lot of support around*
> *the 'net and in the QCUIAG group on Yahoo!*
>
>
> > *I'll need additional optics, right? I don't expect the usual webcam*
> > *will focus on a 16mm backlit object at full frame.*
>
> *No, the existing lens will focus down to extremely close and I have*
> *no doubt that you'll be able to get acceptable images for TV use.*
> *I have focused an image of a UK five pence piece (18mm dia)*
> *full screen on a TV monitor using a tiny security camera and its*

- > *standard screw-thread lens . I shot a photo of the screen on my*
- > *Olympus C3000z which I could make available later if there's*
- > *some interest.*
- >
- > *You may need to be careful that you don't over illuminate the chip.*
- > *but a layer or three of matt white plastic diffuser should do it.*
- >
- >
- > > *Is there an easy*
- > > *solution here that I'm missing?*
- >
- > *Webcam!*

The largest chip that has been fitted to the Toucam, that I know of, is a 0.5" unit (I have one here, that I did myself). Though the Toucam is not the 'cheapest' camera, as a whole, it is probably the cheapest 'route', and is a very small assembly too.

As has been pointed out, 'direct contact' won't work, so some optics will have to be added. The cheapest route that I can think of to scan film, with reasonable resolution, would be to use a much simpler 'line' scanner assembly, and a moving holder, with a simple focussing system. This will give much higher resolutions than the Toucam approach. However you then have to realise that small USB film scanners are available for about £100, with everything allready built...

Best Wishes