Privacy monitor hacked from an old LCD Monitor

by **dimovi** on November 21, 2011

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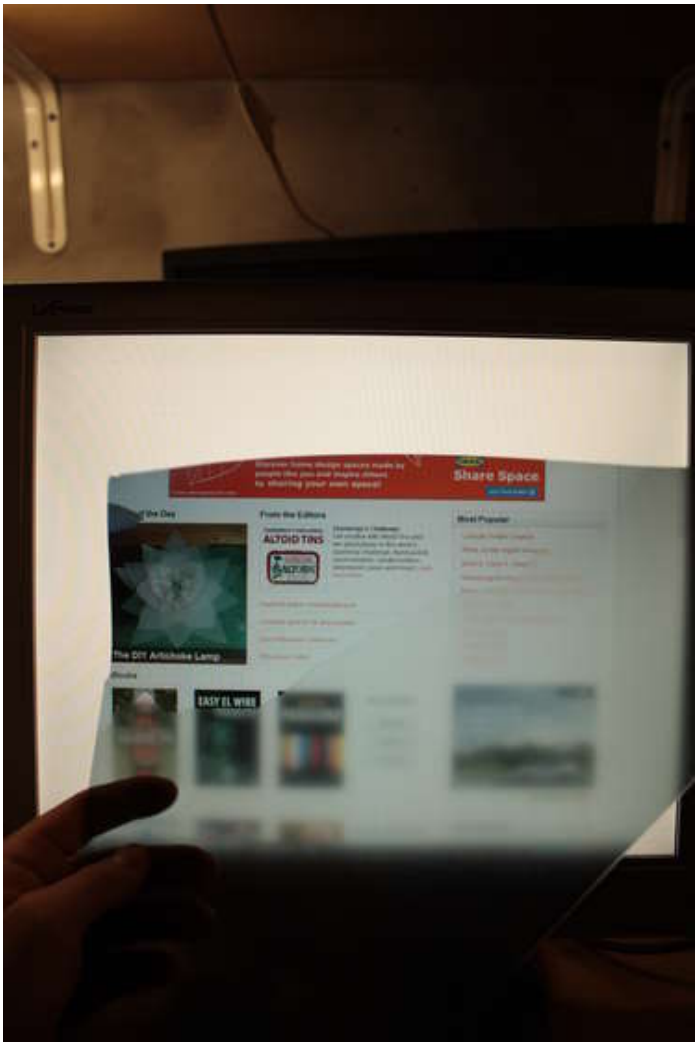
I'm an electrical engineer interested in making stuff!

Intro: Privacy monitor hacked from an old LCD Monitor

Finally you can do something with that old LCD monitor you have in the garage.
You can turn it into a privacy monitor! It looks all white to everybody except you, because you are wearing "magic" glasses!
All you really **have to have** is a pair of old glasses, x-acto knife or a box cutter and some solvent (paint thinner)

Here is what I used:
an LCD monitor of course
single use 3D glasses from the movie theater (old sunglasses are just fine)
paint thinner (or some other solvent such as toluene, turpentine, acetone, methyl acetate, ethyl acetate etc)
box cutter (and CNC laser cutter :) but that you don't really need, I'm sure x-acto knife and a steady hand would do just fine)
screwdriver or a drill
paper towels
superglue



Step 1: Take the monitor apart

Find an old monitor that you are willing to sacrifice.
Take off the plastic frame by unscrewing all screws from the back.




Step 2: Cut the polarized film

Most LCD monitors have two films on the glass - a polarized one to filter out the light you are not supposed to see, and a frosted anti-glare film. The anti-glare film we don't need, the polarized one we do - it is used for the glasses.

So, grab you cutting tool and cut the films along the edge. Don't be afraid to press, metal wont scratch the glass, unless there is sand or other abrasives on it.

Then, start peeling. Make sure to save the polarized film, also remember the orientation.

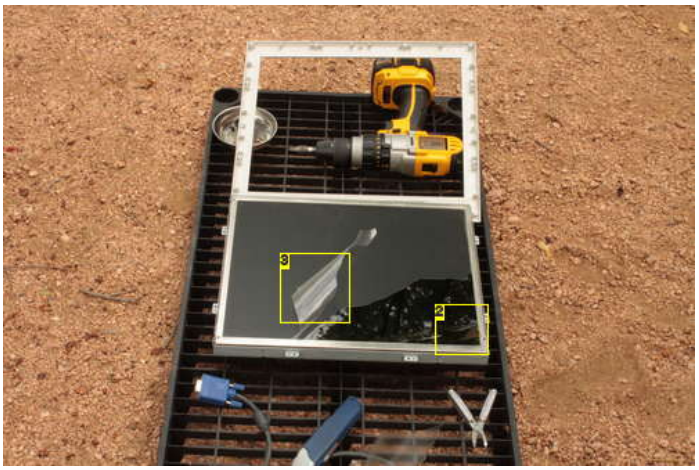



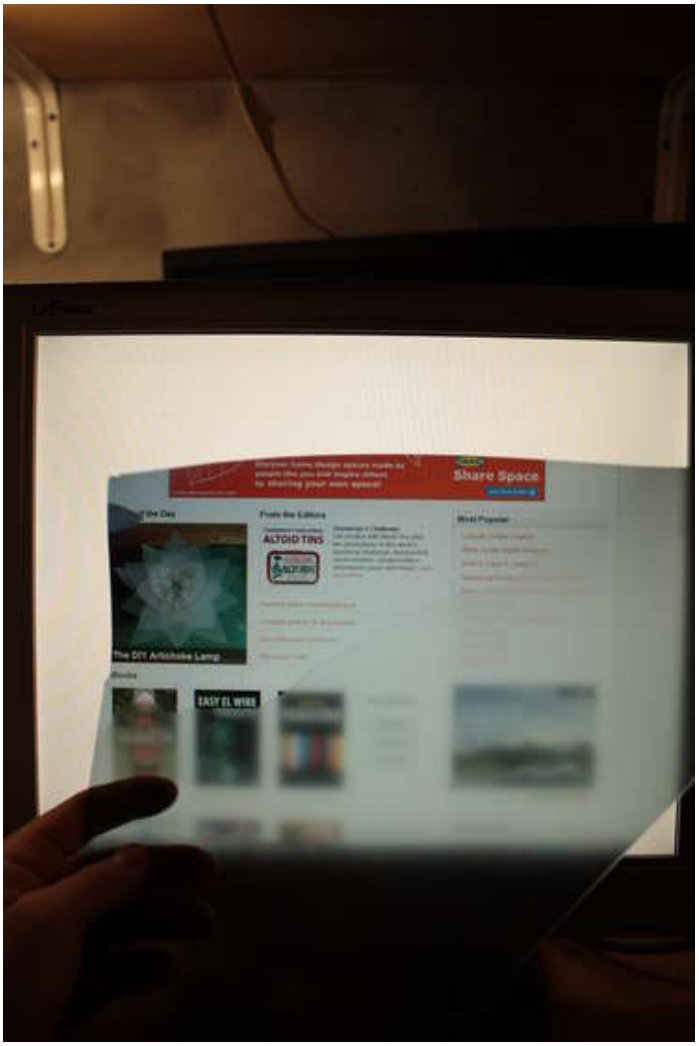
Image Notes
1. This is the corner of the polarized film peeling off.
2. This is the corner of the polarized film peeling off. Save this, you need it for the glasses.
3. This is the matte anti-glare film which we don't need.

Step 3: Clean the film adhesive

After you remove the film, the glue will likely remain stuck to the glass, so here comes the messy part.
With some solvent, soften the glue and wipe it off with paper towels.
I started with OOPS, but that was not fast enough so I got some paint thinner.
I found out that if you cover the screen with paper towels and then soak them in paint thinner you can let it sit longer and dissolve the adhesive without running and evaporating.
Scrape off the soft glue with a piece of plastic or wood.
Be careful not to get paint thinner on the plastic frame, because it will dissolve it.

Step 4: Monitor - done

After cleaning the adhesive, assemble everything back the way it was. Before even making the glasses, you can test the monitor with the polarized film!
Notice how the upper left corner looks clear, because it has the anti-glare film removed. That is the part we are going to use to make the glasses.

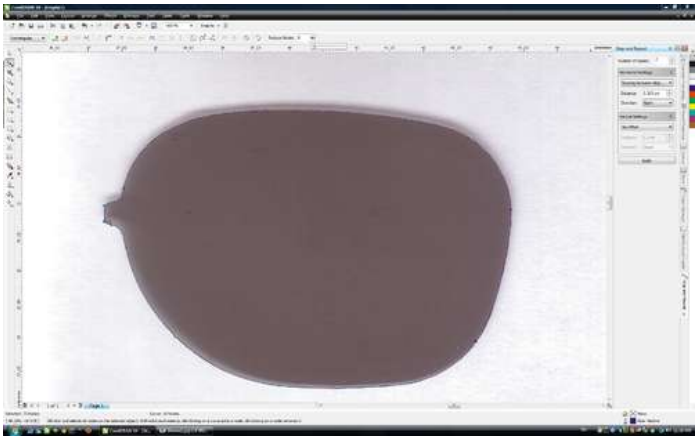


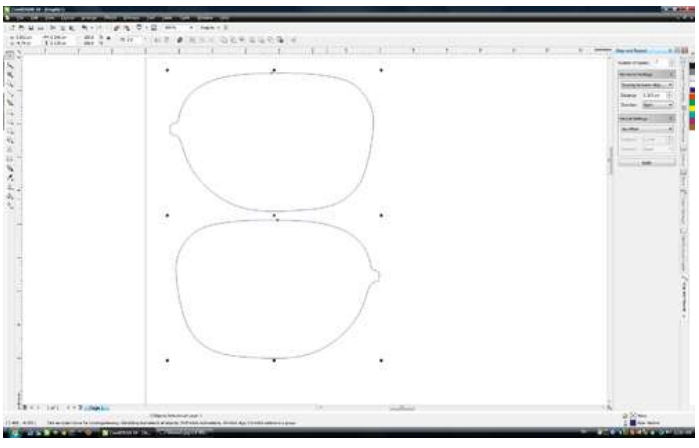
Step 5: Pop the lenses out

For the glasses, I used single use 3D glasses from the movie theater, but you can use whatever you want.
Pop out the lenses or take the glasses apart if you can.

Step 6: Scan, Trace, Cut

If you are going to use a cnc blade or laser cutter, scan and trace the parts.
You can find a local vinyl or laser cutting service, or you could send them to an online service like CutYourWay.com
I scanned the frames so I can use them as a reference for the lens orientation.
Remember, this is a polarized film so the angle is critical. Back and front also matters.
If you don't have access to a cnc cutter or you don't want to wait for an online service, you can probably tape the old lenses on the film and then cut them out with an x-acto knife.





Step 7: Reassemble glasses and enjoy!

Finally assemble the glasses and you are ready for some fun!
People might think you are crazy, staring at a blank white screen wearing sunglasses!
But I guess that makes it even more fun!

Comments

50 comments **Add Comment** **view all 273 comments**

isolt says: Jul 11, 2012. 1:19 AM **REPLY**
The soaking in hot water worked for me!

alexwu2211 says: Jun 21, 2012. 1:21 AM **REPLY**
does this work with a laptop?

fs3 says: Jun 10, 2012. 8:49 PM **REPLY**
i get how u to make the polarized glasses but where do u get the white privacy screen from ?

sermeric says: May 8, 2012. 6:12 AM **REPLY**
is it temporary or stays forever like this?

Grey_Wolfe says: May 7, 2012. 6:43 PM **REPLY**
Rubbing alcohol is often very effective at removing glue goo and it is completely safe for the hardware.

If you use the hand sanitizers without scent or moisturizers, this gives you the benifits of rubbing alcohol while making it evaporate a bit slower.

I use it quite often for removing tape goo and have never had an issue.

barri_kid says: Mar 25, 2012. 2:59 PM **REPLY**

I do want to make this, when I get the parts. I am getting some glasses for it, and I am thinking of getting these
http://www.dealextreme.com/p/re-useable-plastic-frame-resin-lens-anaglyphic-blue-red-3d-glasses-44635
For the lens, does it have to be flat? These glasses have a bend in the lens, so I am unsure if they will work properly.

barri_kid says: Apr 23, 2012. 8:43 PM **REPLY**

Well, I must have done something to break it :/ It turns on, but no picture is produced.

Shiply_Spain says: Apr 19, 2012. 7:55 AM **REPLY**

Can you do that with a smartphone?

Skeletor231 says: Mar 20, 2012. 9:54 PM **REPLY**

Would this also work on tv's with LCD?

code man says: Mar 20, 2012. 12:06 PM **REPLY**

i want to try this on a small lcd tv, for m-rated video games, but, i think the tv might flicker once or twice because of the flashing in some old games

code man says: Mar 20, 2012. 11:54 AM **REPLY**

I'm going to tri it on a small lcd tv, for m-rated games for my x-box

Stuchi says: Mar 18, 2012. 6:43 PM **REPLY**

I'm giving you a choice. Either put on these glasses, or start eating that trash can.

metalldeth says: Mar 4, 2012. 3:19 PM **REPLY**

could something like this be possible but with text on paper instead of an LCD screen?

lmno101 says: Mar 13, 2012. 12:31 AM **REPLY**

Kind of , not like this since the polarized (dark) plastic filters out the light that the monitor gives out to create the images.

However, the same idea of using a lens to see something on a paper is possible if you were able to find some substance that can only be seen through a respective filter. For example, with black light it would be possible to see hidden image/substances on a piece of paper (think of blood ala CSI). But you would have to figure how that works through a lens instead of the light reflection. If someone experimented I'm sure they would figure it out.

solrac says: Mar 8, 2012. 8:28 AM **REPLY**

This is awsome!

dweebsunited says: Feb 27, 2012. 10:12 AM **REPLY**

I notice that someone else asked this up above, but theres no response.. I got the films off the screen, but the antiglare film is stuck to the polarizing sheet, and trying to separate the two is futile.. any recomendations for getting the two apart?

Also, if all else fails, would buying a new sheet of linearly polarized film work? If i oriented it correctly before cutting the lenses, of course

jcksparr0w says: Feb 23, 2012. 11:10 AM **REPLY**

i love it dude

TheGreatS says: Feb 13, 2012. 4:20 PM **REPLY**

I tried cutting it out by hand (mainly due to the lack of laser/CNC awesomeness lying around) and it worked great. I taped the old lenses to the film (like you suggested) and then cut it out every so slowly with an hobby knife. They don't fall out or wiggle around to much so I'm happy with my result.

WakeUpWolfgang says: Feb 2, 2012. 9:26 AM **REPLY**

Where can I get some polarized film for the glasses the film on my screen is really old and brakes off into small pieces. The only large piece that I have is attached to the mat film and wont come off with out braking up. I did not cut my film off I just took off the metal that was holding the screen together and then you can just peal it off.

Dyolf_Knip says: Dec 9, 2011. 8:32 PM **REPLY**

Aw, crap. My monitor had a small circuit board along one side which connected to the LCD panel with 3 very thin, very _fragile_ flat cables, which got ripped while I was peeling off the film. I should have reassembled most of the monitor before getting to this part, so I wasn't putting stress on the connections. Drats.

Good thing I was using a semi-busted old display.

pro2xy says: Jan 25, 2012. 10:31 AM **REPLY**

that must have been the inverter for the backlights

autofire says: Nov 29, 2011. 10:38 PM **REPLY**

My LCD screens film seems to have the matte finish and polarized film as one sheet, so its incredibly hazy, anything i can do to clear it up?

hoff13 says: Dec 13, 2011. 8:05 AM **REPLY**

You can just put the piece in between damp paper towels for about an hour or two and the matte finish will peel off quite easily. BTW, hot water worked better for me.

PCChazter says: Dec 18, 2011. 7:20 PM **REPLY**

I tried this, but the polarized film stuck to the matte finish, and a piece of clear plastic pealed off

computer_guy says: Jan 17, 2012. 10:06 PM **REPLY**

try 4 hours instead of 2, and dont go less than 4 hours. on top of that, try and go in a different direction from the polarization.

computer_guy says: Jan 18, 2012. 1:23 PM **REPLY**

as an added note, make sure you focus ONLY on removing the Anti-Glare film. when you're done removing it, LET IT DRY. Don't try to cut it. DONT use paper towels. They will stick to the polarization film. You might want to try a hair dryer, or if you want to play it safe, place the film on aluminum foil.

dimovi says: Nov 30, 2011. 6:16 PM **REPLY**

You can buy just the polarizing film online like this one
http://www.amazon.com/Rosco-Cinegel-Linear-Polarizing-Filter/dp/B000B78216/ref=sr_1_2?ie=UTF8&qid=1322705042&sr=8-2
I have no idea how to separate the films, since mine came apart without too much effort.

Mattrox says: Jan 6, 2012. 5:52 PM **REPLY**

I wonder if this could be done on a cellphone?

uldics says: Dec 25, 2011. 10:50 AM **REPLY**

I actually had done this before we got internets in the end of 80ties. But just for my watch, didnt have LCD monitors back then. The polarising film was taken from screendead egg catching game: http://curiosityquills.com/wp-content/uploads/2011/06/elektronika_im02_nu_pogodi.jpg
And the only thing I could use it for was my Elektronika 5 watch.

jx53 says: Dec 19, 2011. 8:02 PM **REPLY**

I am curently making this on an old laptop that I've paid 50$ yesterday like I was suggesting and it work like a charm, Yon don't even need to cut anything. I just disasembled the screen and then scratch a corner until the filter lift up so I can pull it.
I'll post photos if you want when It will be done.

Meister27 says: Dec 16, 2011. 1:26 AM **REPLY**

Will it work with that? http://www.amazon.de/Brille-Hornbrille-Polarisationsbrille-Wayfarer-style/dp/B004QNER5Q/ref=sr_1_3?ie=UTF8&qid=1324027375&sr=8-3

dimovi says: Dec 16, 2011. 7:11 AM **REPLY**

Probably not. It is all about the angle of polarization, and i've never seen glasses polarized the same way as monitors.

Meister27 says: Dec 17, 2011. 4:53 AM **REPLY**

Okay thanks! Next question: Will that work? http://www.tradoria.de/optik-baukasten/polarisationsfolie-330189346.html

My LCD screens film seems to have the matte finish and polarized film as one sheet. I tried a lot but i cant get them off each other.

jx53 says: Dec 15, 2011. 7:09 PM **REPLY**

Very nice idea and result, it would be so insane to do that on a laptop screen and to use it in a public place =D haha! xD so my question is, will it work the exact same way on a laptop screen? I guess yess but I am asking to make sure it is.

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dimovi says: Dec 15, 2011. 11:38 PM **REPLY**

Yep, any lcd monitor will work.

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beaver84 says: Dec 15, 2011. 5:38 PM **REPLY**

Neat!

Electorials says: Dec 15, 2011. 3:58 AM **REPLY**

Really awesome!

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blinkyblinky says: Dec 13, 2011. 2:24 PM **REPLY**

Cool...

Perfect for me.

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lemon rind says: Nov 24, 2011. 12:13 PM **REPLY**

Would it be possible to make it so one pair see's one half of screen and another pair the other half? For split screen gaming :-)

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ironsmiter says: Nov 25, 2011. 2:48 AM **REPLY**

short answer... no
not with the hardware the author used.

You COULD do it with some more severe hacking.

You would need COMPLETE disassembly of the lcd.
Access to the rear polarizer would be required as well as the front. (see http://en.wikipedia.org/wiki/File:LCD_layers.svg for a super simple diagram of what goes where in an lcd)
Once both are off(Need to come off clean, and complete, cause you'll be using most of both of them). you start the cutting.

First, divide both filters EXACTLY in half.
Second, reassemble the lcd with 1/2 of each filter covering each side of the screen, in place of the rear polarizer.
Third, make two pair of glasses. One with the left over of each polarizer.

If you want to get super tricky, make a third pair of glasses, with one lens of each type. Now, you could display stereographic images onscreen, for your own Stereoscopy!

If the filters didn't come off cleanly(like my last lcd backlight repair... the filters were held against the screen by pressure from the assembled screen frame. Also makes you less likely to destroy your lcd screen with the exacto knife!)
then you still have options!
You can BUY polarizer films pretty cheaply from educational stores/science surplus/e-bay/amazon.
Once you have cleaned the glue residue off from removing the old filters... simply use the new film to do the modification.

FINALLY... If you DO get this to work.
WRITE AN IBLE!
and be kind enough to mention me in credits :-)

hmm. I wonder.
That old Pentium 2 era IBM laptop might just work.
Let the race to document and post begin!

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lemon rind says: Dec 11, 2011. 8:35 PM **REPLY**

Wow, thats no easy task. Mabey I'll try your one before I go quite that far.

Uptonb says: Nov 29, 2011. 1:54 PM **REPLY**

Congrats on being featured here!

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dimovi says: Nov 29, 2011. 4:57 PM **REPLY**

Haha thanks, actually it is featured here too!
lifehacker.com
engadget.com
hackaday.com
news.cnet.com
ohgizmo.com

slashdot.org
stumbleupon.com
journaldugeek.com
reddit.com
and a bunch more
Too bad I didn't get entered in the Hack it challenge before all that traffic :)

Light_Lab says: Dec 11, 2011. 1:51 PM **REPLY**
Why you are so happy you have effectively made our idea useless? This is why I didn't publish it.

Xarxos says: Nov 28, 2011. 12:38 AM **REPLY**
Any idea if this works with LED monitors as well?

sethcim says: Dec 10, 2011. 3:19 PM
(removed by author or community request)

mcavano says: Nov 28, 2011. 10:01 AM **REPLY**
LED monitors have the same LCD matrix, they just have a different back light system, which is of no consequence to this hack. Should work great!

wwinquist says: Nov 29, 2011. 1:23 AM **REPLY**
I have two questions, both of which deal with one problem: I wear prescription glasses. How well does this thing work if you try to use both your lenses and the polarized film? Also, would getting prescription 3D glasses work with this as well? (What about regular 3D glasses like you can get at Best Buy?)

nflemming2004 says: Nov 29, 2011. 8:41 AM **REPLY**
3d glasses for home tv's work using an LCD-shuttering technology (expensive, but works on home tv's), where the movies use a polarization technology (cheap, but only works for special projected displays), so the 3D glasses at best buy won't work. Then again, the 3D glasses at the movies won't work either, since they use "circular" polarized films, and for this hack you need "linear" polarized films...

wwinquist says: Nov 29, 2011. 10:44 AM **REPLY**
What about the prescription part? Would figuring out a way to apply it over the lens work or be worth it?

view all 273 comments