grogu setup

Third Try

In summary, Second Try to install VPixx 3DPixx was doomed by having copied the wrong file to /usr/share/X11/xorg.conf.d/xorg.conf.

However, I didn't understand that until part of the way through this here third try.

After declaring an end to the Second Try (on Monday, 2024-02-19), I decided to do a clean installation of the entire system. (Of course, the /home directory would persist, because it's on its own partition.)

Clean Installation of Xubuntu

Installed 22.04 LTS from my USB drive.

Installed Datapixx tools from USB drive that came with 3DPixx

This seemed better than the version that I could get from the VPixx website, for some reason.

Made link of Datapixx.mex

From '/usr/share/VPixx Software Tools/Software Tools/DatapixxToolbox_trunk/mexdev/build/octave/linux64/Datapixx_octave5.mex' to:

/usr/share/psychtoolbox-3/PsychBasic/Octave4LinuxFiles64/Datapixx.mex

... after putting that directory at the top of my Octave path.

So that:

lrwxrwxrwx 1 root 117 Feb 20 10:53
/usr/share/psychtoolbox-3/PsychBasic/Octave4LinuxFiles64/Datapixx.mex
->
'/usr/share/VPixx Software Tools/Software
Tools/DatapixxToolbox trunk/mexdev/build/octave/linux64/Datapixx octave5.mex'

Copied wrong, then correct xorg.conf file to /usr/share/X11/xorg.conf.d/

2024-02-20 12:20

First tried

xorg.conf.new.1024x768_120

This breaks PTB; it won't do anything, throws several kinds of errors. Can't even run XorgConfCreator (or whatever the function's name is), either.

Then tried

90-ptbconfig_single_xscreen_amdgpu_MODIFIED.conf

This allows DatapixxImagingStereoDemo to work!

- That is, the execution of the program on Octave.

- EdgeVR LCD glasses (the ones that came from VPixx) wouldn't work/sync, though.

- Third-party LCD glasses worked, but only for less than a minute, just like during the First Try, before stopping to work (both lenses remained clear, no alternation and thus no stereopsis).

Tried switching Datapixx.mex link to point to Datapixx_xenial.mex

2024-02-23

Summary: Datapixx octave function stopped working.

Did:

```
anthony@grogu:Octave4LinuxFiles64$ ln -sf "/usr/share/VPixx Software
Tools/Software
Tools/DatapixxToolbox_trunk/mexdev/build/octave/linux64/Datapixx_xenial.mex"
Datapixx.mex
```

Got message that Datapixx.mex not found when tried using Octave, specifically when trying to run Demos or trying to do Datapixx('Open').

So I changed the link back, so that it points to Datapixx_octave5.mex.

PTB messages after successfully running VBLSyncTest

octave:2> VBLSyncTest

PTB-INFO: This is Psychtoolbox-3 for GNU/Linux X11, under GNU/Octave 64-Bit (Version 3.0.19 - Build date: Dec 17 2023). PTB-INFO: OS support status: Linux 6.5.0-21-generic Supported. PTB-INFO: Type 'PsychtoolboxVersion' for more detailed version information. PTB-INFO: Most parts of the Psychtoolbox distribution are licensed to you under terms of the MIT License, with PTB-INFO: some restrictions. See file 'License.txt' in the Psychtoolbox root folder for the exact licensing conditions.

PTB-INFO: For information about paid support, support memberships and other commercial services, please **type** PTB-INFO: 'PsychPaidSupportAndServices'.

PTB-INF0: Connected to Advanced Micro Devices, Inc. [AMD/ATI] Polaris 20 XL [Radeon RX 580 2048SP] GPU with DCE-11.0 display engine [6 heads].

PTB-INF0: OpenGL-Renderer is AMD :: AMD Radeon RX 580 2048SP (polaris10, LLVM 15.0.7, DRM 3.54, 6.5.0-21-generic) :: 4.6 (Compatibility Profile) Mesa 23.2.1-lubuntu3.1~22.04.2 PTB-INF0: VBL startline = 768 , VBL Endline = 824 PTB-INF0: Measured monitor refresh interval from beamposition = 8.344144 ms [119.844525 Hz]. PTB-INF0: Will try to use OS-Builtin OpenML sync control support for accurate Flip timestamping. PTB-INF0: Measured monitor refresh interval from VBLsync = 8.344126 ms [119.844790 Hz]. (50 valid samples taken, stddev=0.001443 ms.) PTB-INFO: Reported monitor **refresh** interval from operating system = 8.343972 ms [119.847000 Hz]. PTB-INFO: Small deviations between reported values are normal and no reason to worry. The **refresh** interval reported by the operating system **is** 8.33333 ms. libptbdrawtext ftgl: External 'DrawText' text rendering plugin initialized. libptbdrawtext ftgl: Maximum number of cacheable fonts is 40, minimum number of supported concurrent windows is 10. libptbdrawtext ftgl: This plugin uses multiple excellent free software libraries to do its work: libptbdrawtext ftgl: OGLFT (http://oglft.sourceforge.net/) the OpenGL-FreeType librarv. libptbdrawtext ftgl: The FreeType-2 (http://freetype.sourceforge.net/) library. libptbdrawtext_ftgl: The FontConfig (http://www.fontconfig.org) library. Version Id: 21301 libptbdrawtext ftgl: Thanks! Measured refresh interval, as reported by "GetFlipInterval" is 8.34413 ms. (nsamples = 0, stddev = 0.00000 ms)^[PTB missed 0 out of 213 stimulus presentation deadlines. One missed deadline is ok and an artifact of the measurement. PTB completed 0 stimulus presentations before the requested target time.

Have a look at the plots for more details...

PTB messages after running DatapixxImagingStereoDemo

(Unsuccessfully in that the LCD glasses that came from VPixx don't do anything at all. Pressing their button before execution of the demo's script does nothing. Pressing the button after the script has begun makes the glasses turn opaque [both lenses] and then alternate; and then a second press makes them alternate a few times again; and then after that additional button presses do nothing [lenses remain clear].)

PTB output:

```
octave:3> Datapixx('Open')
ans = 1
octave:4> DatapixxImagingStereoDemo
PTB-INFO: This is Psychtoolbox-3 for GNU/Linux X11, under GNU/Octave 64-Bit
(Version 3.0.19 - Build date: Dec 17 2023).
```

PTB-INFO: OS support status: Linux 6.5.0-21-generic Supported. PTB-INFO: Type 'PsychtoolboxVersion' for more detailed version information. PTB-INFO: Most parts of the Psychtoolbox distribution are licensed to you under terms of the MIT License, with PTB-INFO: some restrictions. See file 'License.txt' in the Psychtoolbox root folder for the exact licensing conditions. PTB-INFO: For information about paid support, support memberships and other commercial services, please type PTB-INF0: 'PsychPaidSupportAndServices'. PTB-INFO: Connected to Advanced Micro Devices, Inc. [AMD/ATI] Polaris 20 XL [Radeon RX 580 2048SP] GPU with DCE-11.0 display engine [6 heads]. PTB-INF0: OpenGL-Renderer is AMD :: AMD Radeon RX 580 2048SP (polaris10, LLVM 15.0.7, DRM 3.54, 6.5.0-21-generic) :: 4.6 (Compatibility **Profile**) Mesa 23.2.1-1ubuntu3.1~22.04.2 PTB-INFO: VBL startline = 768 , VBL Endline = 824 PTB-INFO: Measured monitor **refresh** interval from beamposition = 8.344100 ms [119.845154 Hz]. PTB-INFO: Will try to use OS-**Builtin** OpenML sync control support for accurate Flip timestamping. PTB-INFO: Measured monitor **refresh** interval from VBLsync = 8.344126 ms [119.844790 Hz]. (50 valid samples taken, stddev=0.000414 ms.) PTB-INFO: Reported monitor **refresh** interval from operating system = 8.343972 ms [119.847000 Hz]. PTB-INFO: Small deviations between reported values are normal and no reason to worry. PTB-INFO: SetDitherMode: Trying to disable digital display dithering on display **head** 0. PTB-INFO: SetDitherMode: Dithering already disabled. Skipped. LoadIdentityClut: Used GPU low-level setup code to configure (hopefully) perfect identity pixel passthrough. **ERROR**: Invalid device for current operation **ERROR**: Invalid device for current operation warning: Matlab-style short-circuit operation performed for operator | warning: called from DatapixxImagingStereoDemo at line 203 column 5 warning: Matlab-style short-circuit operation performed for operator | warning: called from DatapixxImagingStereoDemo at line 199 column 5 ^[N.Dots Mean (s) Max (s) %>20ms %>30ms 1000 0.008 0.033 0.00 0.00

Basic info about the GPU, Linux system, Octave, PTB and Datapixx

2024-02-23

Linux system info.

```
anthony@grogu:DatapixxDemos$ uname -a
Linux grogu 6.5.0-21-generic #21~22.04.1-Ubuntu SMP PREEMPT_DYNAMIC Fri Feb 9
13:32:52 UTC 2 x86_64 x86_64 x86_64 GNU/Linux
```

lspci -v output (GPU info.)

```
01:00.0 VGA compatible controller: Advanced Micro Devices, Inc. [AMD/ATI]
Polaris 20 XL [Radeon RX 580 2048SP] (rev ef) (prog-if 00 [VGA controller])
Subsystem: Advanced Micro Devices, Inc. [AMD/ATI] Polaris 20 XL [Radeon RX
580 2048SP]
Flags: bus master, fast devsel, latency 0, IRQ 138
Memory at a0000000 (64-bit, prefetchable) [size=256M]
Memory at b0000000 (64-bit, prefetchable) [size=2M]
I/0 ports at 3000 [size=256]
Memory at b2200000 (32-bit, non-prefetchable) [size=256K]
Expansion ROM at 000c0000 [disabled] [size=128K]
Capabilities: <access denied>
Kernel driver in use: amdgpu
Kernel modules: amdgpu
```

xorg.conf file

As it says above, I had copied 90-ptbconfig_single_xscreen_amdgpu_MODIFIED.conf to /usr/share/X11/xorg.conf.d/xorg.conf

Contents of this xorg.conf file:

```
# Auto generated xorg.conf - Created by Psychtoolbox XOrgConfCreator.
Section "ServerFlags"
Option "AutoAddGPU" "false"
EndSection
```

```
Section "Device"
  Identifier "Card0"
  Driver
              "amdqpu"
              "VariableRefresh" "off"
  Option
EndSection
Section "Screen"
  Identifier
                "Screen0"
  Device
                "Card0"
 # added
             "DVI-D-0"
 Monitor
 # commented out 2023-10-13
  #DefaultDepth 30
EndSection
# added section
Section "Monitor"
    Identifier
                 "0-CRT1"
    Option
                  "VendorName" "ATI Proprietary Driver"
                  "ModelName" "Generic Autodetecting Monitor"
    Option
                  "DPMS" "true"
    Option
    Option
                  "PreferredMode" "1600x1200"
                  "TargetRefresh" "85"
    Option
                  "Position" "0 0"
    Option
    Option
                  "Rotate" "normal"
                  "Disable" "false"
    Option
EndSection
# added section
Section "Monitor"
    # 1024x768 119.80 Hz (CVT) hsync: 98.96 kHz; pclk: 137.75 MHz
    Identifier
                 "DVI-D-0"
    ModeLine
                 "1024x768 120.00" 137.8 1024 1104 1208 1392 768 771 775 826 -
hsync +vsync
# Option
                "VendorName" "ATI Proprietary Driver"
                  "ModelName" "Generic Autodetecting Monitor"
    Option
    Option
                  "DPMS" "true"
                  "PreferredMode" "1024x768"
    Option
                  "TargetRefresh" "120"
    Option
                  "Position" "0 0"
    Option
                  "Rotate" "normal"
    Option
                  "Disable" "false"
    Option
EndSection
```

OpenGL info.

glxgears output

anthony@grogu:DatapixxDemos\$ glxgears Running synchronized to the vertical refresh. The framerate should be approximately the same **as** the monitor refresh rate. 687 frames in 5.0 seconds = 137.207 FPS 600 frames in 5.0 seconds = 119.857 FPS 600 frames in 5.0 seconds = 119.845 FPS X connection to :0.0 broken (explicit kill or server shutdown).

glxgears -info output

Complete output (GL_EXTENSIONS field is very long):

= AMD Radeon RX 580 2048SP (polaris10, LLVM 15.0.7, DRM 3.54, GL RENDERER 6.5.0-21-generic) GL VERSION = 4.6 (Compatibility Profile) Mesa 23.2.1-1ubuntu3.1~22.04.2 GL VENDOR = AMD GL EXTENSIONS = GL ARB multisample GL EXT abgr GL EXT bgra GL EXT blend color GL EXT blend minmax GL EXT blend subtract GL EXT copy texture GL EXT subtexture GL EXT texture object GL EXT vertex array GL EXT compiled vertex array GL EXT texture GL EXT texture3D GL_IBM_rasterpos_clip GL_ARB_point_parameters GL_EXT_draw_range_elements GL_EXT_packed_pixels GL_EXT_point_parameters GL_EXT_rescale_normal GL EXT separate specular color GL EXT texture edge clamp GL_SGIS_generate_mipmap GL_SGIS_texture_border_clamp GL SGIS texture edge clamp GL SGIS texture lod GL ARB framebuffer sRGB GL ARB multitexture GL EXT framebuffer sRGB GL IBM multimode draw arrays GL IBM texture mirrored repeat GL ARB texture cube map GL ARB texture env add GL ARB transpose matrix GL EXT blend func separate GL EXT fog coord GL EXT multi draw arrays GL EXT secondary color GL EXT texture env add GL_EXT_texture_filter_anisotropic GL_EXT_texture_lod_bias GL INGR blend func separate GL NV blend square GL NV light max exponent GL NV texgen reflection GL NV texture env combine4 GL S3 s3tc GL SUN multi draw arrays GL ARB texture border clamp GL ARB texture compression GL EXT framebuffer object GL_EXT_texture_compression_s3tc GL_EXT_texture_env_combine GL EXT texture env dot3 GL MESA window pos GL NV packed depth stencil GL NV texture rectangle GL ARB depth texture GL ARB occlusion query GL ARB shadow GL ARB texture env combine GL ARB texture env crossbar GL_ARB_texture_env_dot3 GL_ARB_texture_mirrored_repeat GL_ARB_window pos GL ATI fragment shader GL EXT stencil two side GL EXT texture cube map

GL NV copy depth to color GL NV depth clamp GL NV fog distance GL NV half float GL APPLE packed pixels GL ARB draw buffers GL ARB fragment program GL ARB fragment shader GL ARB shader objects GL ARB vertex program GL ARB vertex shader GL ATI draw buffers GL ATI texture env combine3 GL ATI texture float GL EXT depth bounds test GL_EXT_shadow_funcs GL_EXT_stencil_wrap GL_MESA_pack_invert GL NV primitive restart GL ARB depth clamp GL ARB fragment program shadow GL ARB half float pixel GL ARB occlusion guery2 GL ARB point sprite GL ARB shading language 100 GL ARB sync GL ARB texture non power of two GL ARB vertex buffer object GL ATI blend equation separate GL EXT blend equation separate GL OES read format GL ARB color buffer float GL ARB pixel buffer object GL ARB texture compression rgtc GL ARB texture float GL ARB texture rectangle GL ATI texture compression 3dc GL EXT packed float GL EXT pixel buffer object GL EXT texture compression dxt1 GL_EXT_texture_compression_rgtc GL_EXT_texture_mirror_clamp GL EXT texture rectangle GL EXT texture sRGB GL EXT texture shared exponent GL ARB framebuffer object GL EXT framebuffer blit GL EXT framebuffer multisample GL EXT packed depth stencil GL ARB vertex array object GL ATI separate stencil GL ATI texture mirror once GL EXT draw buffers2 GL EXT draw instanced GL EXT gpu program parameters GL EXT gpu shader4 GL EXT texture array GL EXT texture compression latc GL EXT texture integer GL EXT texture sRGB decode GL EXT timer query GL_OES_EGL_image GL_AMD_performance_monitor GL_EXT_texture_buffer_object GL AMD texture texture4 GL ARB copy buffer GL ARB depth buffer float GL ARB draw instanced GL ARB half float vertex GL ARB instanced arrays GL ARB map buffer range GL ARB texture buffer object GL ARB texture rg GL_ARB_texture_swizzle GL_ARB_vertex_array_bgra GL_EXT_texture_swizzle GL EXT vertex array bgra GL NV conditional render GL AMD conservative depth GL AMD depth clamp separate GL AMD draw buffers blend GL_AMD_seamless_cubemap_per_texture GL_AMD_shader_stencil export GL ARB ES2 compatibility GL ARB blend func extended GL ARB compatibility GL_ARB_debug_output GL_ARB_draw_buffers_blend GL_ARB_draw_elements_base_vertex GL ARB explicit attrib location GL ARB fragment coord conventions GL ARB provoking vertex GL ARB sample shading GL ARB sampler objects GL ARB seamless cube map GL ARB shader stencil export GL ARB shader texture lod GL ARB tessellation shader GL ARB texture buffer object rgb32 GL ARB texture cube map array GL ARB texture gather GL ARB texture multisample GL ARB texture query lod GL ARB texture rgb10 a2ui GL ARB uniform buffer object GL ARB vertex type 2 10 10 10 rev GL ATI meminfo GL EXT provoking vertex GL EXT texture snorm GL MESA texture signed rgba GL NV copy image GL NV texture barrier GL ARB draw indirect GL ARB get program binary GL ARB gpu shader5 GL ARB gpu shader fp64 GL ARB robustness GL ARB separate shader objects GL ARB shader bit encoding GL ARB shader precision GL ARB shader subroutine GL ARB texture compression bptc GL ARB timer query GL ARB transform feedback2 GL_ARB_transform_feedback3 GL_ARB_vertex_attrib_64bit GL_ARB_viewport_array GL EXT direct state access GL EXT shader image load store

GL_EXT_vertex_attrib_64bit GL_NV_vdpau_interop GL_AMD_multi_draw_indirect GL ANGLE texture compression dxt3 GL ANGLE texture compression dxt5 GL ARB base instance GL ARB compressed texture pixel storage GL ARB conservative depth GL ARB internal format query GL ARB map buffer alignment GL ARB shader atomic counters GL ARB shader image load store GL ARB shading language 420pack GL ARB shading language packing GL ARB texture storage GL ARB transform feedback instanced GL EXT framebuffer_multisample_blit_scaled GL EXT transform feedback GL AMD query buffer object GL AMD shader trinary minmax GL AMD vertex shader layer GL AMD vertex shader viewport index GL ARB ES3 compatibility GL ARB arrays of arrays GL ARB clear buffer object GL ARB compute shader GL ARB copy image GL ARB explicit uniform location GL ARB fragment layer viewport GL ARB framebuffer no attachments GL ARB invalidate subdata GL ARB multi draw indirect GL_ARB_program_interface_query GL_ARB_robust buffer access behavior GL ARB shader image size GL ARB shader storage buffer object GL ARB stencil texturing GL ARB texture buffer range GL ARB texture query levels GL ARB texture storage multisample GL ARB texture view GL ARB vertex attrib binding GL KHR debug GL KHR robustness GL KHR texture compression astc ldr GL AMD pinned memory GL ARB bindless texture GL ARB buffer storage GL ARB clear texture GL_ARB_compute_variable_group_size GL_ARB_enhanced_layouts GL ARB indirect parameters GL ARB internalformat query2 GL ARB multi bind GL ARB query buffer object GL ARB seamless cubemap per texture GL ARB shader draw parameters GL ARB shader group vote GL ARB shading language include GL ARB texture mirror clamp to edge GL ARB texture stencil8 GL ARB vertex type 10f 11f 11f rev GL EXT debug label GL EXT shader integer mix GL NVX gpu memory info GL ARB ES3 1 compatibility GL ARB clip control GL ARB conditional render inverted GL ARB cull distance GL ARB derivative control GL ARB direct state access GL_ARB_get_texture_sub_image GL_ARB_pipeline_statistics query GL_ARB_shader_texture_image_samples GL ARB texture barrier GL ARB transform feedback overflow query GL EXT polygon offset clamp GL_EXT_shader_image_load_formatted GL_KHR blend equation advanced GL KHR context flush control GL KHR robust buffer access behavior GL NV shader atomic int64 GL ARB ES3 2 compatibility GL ARB gpu shader int64 GL ARB parallel shader compile GL ARB shader atomic counter ops GL ARB shader ballot GL ARB shader clock GL ARB shader viewport layer array GL EXT shader samples identical GL EXT texture sRGB R8 GL KHR no error GL KHR texture compression astc sliced 3d GL ARB gl spirv GL ARB spirv extensions GL EXT window rectangles GL MESA shader integer functions GL ARB polygon offset clamp GL ARB texture filter anisotropic GL EXT memory object GL EXT memory object fd GL EXT semaphore GL EXT semaphore fd GL KHR parallel shader compile GL NV alpha to coverage dither control GL AMD framebuffer multisample advanced GL_EXT_EGL_image_storage GL_EXT_texture_shadow lod GL INTEL blackhole render GL MESA framebuffer flip y GL NV compute shader derivatives GL EXT EGL sync

```
GL_EXT_demote_to_helper_invocation GL_NV_ES1_1_compatibility
VisualID 1300, 0x514
```

Octave version

I installed Octave by doing

sudo apt install octave

anthony@grogu:DatapixxDemos\$ octave --version GNU Octave, version 6.4.0 Copyright (C) 2021 The Octave Project Developers. This is **free** software; see the source code for copying conditions. There is ABSOLUTELY NO WARRANTY; not even for MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE.

Octave was configured for "x86_64-pc-linux-gnu".

Additional information about Octave is available at https://www.octave.org.

Please contribute if you **find** this software useful. For **more** information, visit https://www.octave.org/get-involved.html

Read https://www.octave.org/bugs.html to learn how to submit bug reports.

Psychtoolbox (PTB) version

I installed PTB for Octave using NeuroDebian (see: this site).

```
octave:5> PsychtoolboxVersion
ans = 3.0.19 - Flavor: Debian package - psychtoolbox-3
(3.0.19.7.dfsgl-1~nd22.04+1)
For more info visit:
http://neuro.debian.net/pkgs/octave-psychtoolbox-3.html
```

```
octave:6> Screen('Version')
ans =
```

scalar structure containing the fields:

```
version = 3.0.19.673758066
major = 3
minor = 0
```

```
point = 19
build = 6.7376e+08
date = Dec 17 2023
time = 03:01:06
module = Screen
project = OpenGL Psychtoolbox
os = GNU/Linux X11
language = GNU/Octave 64-Bit
authors =
```

VPixx Datapixx Firmware version

```
octave:13> firmwareRev = Datapixx('GetFirmwareRev')
firmwareRev = 27
```

Following advice from VPixx to fix LCD glasses functioning

2024-02-26

VPixx (Lindsey Fraser from technical support responding on behalf of Sophie Kenny) replied to me within an hour! Based on the detailed email instructions, I did both of these things:

1. Changed line 62 of DatapixxImagingStereoDemo.m

Changed the argument from "2" to "5":

Datapixx('SetVideoStereoVesaWaveform',5)

to

Datapixx('SetVideoStereoVesaWaveform',2)

This made it so that the LCD glasses at least started flickering. They were badly out of phase or frequency, so that there was no stereopsis at all, however.

2. Deleted /usr/share/VPixx Software Tools/ directory and installed latest version of VPixx software tools from their website (https://docs.vpixx.com/download/).

This installed everything to /usr/local/share/VPixx Software Tools.

The version of DatapixxImagingStereoDemo.m that came with this had line 62 already corrected to have Datapixx('SetVideoStereoVesaWaveform',5).

cd /usr/share/psychtoolbox-3/PsychBasic/Octave4LinuxFiles64/
sudo ln -sf /usr/local/share/VPixx\ Software\ Tools/Software\
Tools/Matlab/mexfiles/linux/octave/Datapixx_octave5.mex Datapixx.mex

Datapixx('Open') works.

DatapixxImagingStereoDemo.m "works," but only in the way described above. It *does* work with the generic IR LCD glasses - there was good stereopsis - but there was also some flickering.

13/17

Also, the Datapixx demo still has its usual problem where the disparities get constantly larger (more crossed) until fusion is no longer possible. It starts out with the moving disparity region having a small uncrossed (concave) disparity, which then becomes zero (flat) and then eventually ridiculously large crossed (convex) disparity.

Tried adjusting phase

2024-02-26

Following second email from Lindsey Fraser, I tried a number of different values for the waveform phase in

Datapixx('SetVideoStereoVesaPhase',100);

100 is the value that VPixx uses with their VIEWPixx monitor.

Nothing changed with different values for the phase parameter. Also, in any case, the flickering of the glasses stopped entirely after about 2 or 3 seconds past the onset of DatapixxImagingStereoDemo.m, after which there was no perceptible effect of the glasses, except for a dimming of the lower half of the screen produced by the left lens – weird, but not in a flickering way.

2024-02-27

Was advised that need to do

```
Datapixx('RegWr')
```

after the Set..Phase command in order for it to take effect.

I tried many different settings in the command's range of 0 to 255, and this did start the glasses flickering even before I started running the demo. However, this produced no real perceptible differences on the demo. Also, (alternating-eye) flicker still stops after approx. 2 seconds. After that, there must be some kind of high frequency flickering going on, because the effect is that I perceive a steady (nonflickering) dark horizontal band across the screen that drifts in the up/down direction. The vertical position of the band is slightly different for the two eyes/lenses.

Modified xorg.conf file

2024-02-27

xorg.conf file refers to **two** monitors. I'm really not sure why I included two "monitor" blocks, especially since there is only one physical monitor. I might have tried to copy part of the file from the Diego lab PC from VT, but I can't remember.

Monitor configuration:

AMD Radeon RX 580 GPU DVI-D port → Datapixx DVI-D-in → Datapixx VGA-out → Dell CRT

In any case, I'm going to remove the block referring two the "0-CRT1" monitor and leave the block for the "DVI-D-0" monitor, and see what happens.

I'm going to

1. Make a copy of my xorg.conf file that has the CRT monitor block removed.

I made a copy of the file 90-ptbconfig_single_xscreen_amdgpu_MODIFIED.conf named 90ptbconfig_single_xscreen_amdgpu_MODIFIED_DVI-D-0_ONLY.conf and copied it to /usr/share/X11/xorg.conf.d/xorg.conf

2. Make a copy of my xorg.conf file that has the DVI-D-0 "monitor" block removed.

I named this ...MODIFIED_0-CRT1_ONLY.conf and I copied the 1024x768_120Hz modeline line to the 0-CRT1 block and replaced the reference to DVI-D-0.

RESULTS of 1:

The 1024×768 resolution wasn't available to me, let alone the 119.8Hz setting.

RESULTS of 2:

It displayed a setting for 1024×768, but not the 119.8Hz option.

• **Summary**: It appears I *do* need blocks for *both* monitors in xorg.conf in order to get the 1284x768_120Hz mode.

Where I came up with the labels for the two monitors in xorg.conf

Now I recollect the process of making that xorg.conf file (in 2023-10). I couldn't get the 1024x768_120Hz mode to show up as an option in the display settings, so I examined the (bash terminal) output of xrandr -q. It included references to both DVI-D-0 and 0-CRT1. So that's why I included them both in xorg.conf.

Reason for choosing the 1024x768 resolution

This was the resolution I used with the same CRT monitor in 2014-15 when I ran the first HolesCrowd study using a VPixx 3DPixx system, also on Linux. I need to do a second experiment for that old study now, so I want to use the same viewing conditions.

Changed setting of Datapixx('SetVideoStereoVesaWaveform',X) to zero

2024-02-28

Following advice from Lindsey Fraser again, I tried changing Datapixx('SetVideoStereoVesaWaveform',5) (see above for when changed to that value) to Datapixx('SetVideoStereoVesaWaveform',0). (Followed by Datapixx('RegWr').)

This worked (to a great extent)!

DatapixxImagingStereoDemo.m ran with perfect glasses function. (However, the problem with the demo where the dot disparities become increasingly larger over time until fusion is no longer possible persists.)

I tried running one of my own experiment scripts that I wrote based on DatapixxImagingStereoDemo.m back in 2014. Unfortunately, this didn't work as well.

There was a strongly noticeable dim horizontal band across the screen, which drifted and jumped around in the up/down direction.

I played with Datapixx('SetVideoStereoVesaPhase',X) to see if this had any effect on the band. It didn't reduce the presence of the band, for any values of X. The best I seemed able to do was to make the band dwell slightly longer around the top and/or bottom of the screen, instead of near the middle (while it drifted and jumped around). I got this behavior with the setting Datapixx('SetVideoStereoVesaPhase',0).

Plans: The main thing I can do to recreate the conditions of the 2014 experiment where the 3DPixx worked is to use MATLAB instead of Octave. I haven't tried that with my current 3DPixx yet, so I think I will.

Installed MATLAB

2024-03-06

Installed MATLAB from Mathworks website, logged in under my Roanoke College account.

Downloaded R2023a

Unzipped the .zip file in ~/Downloads directory.

Did:

sudo ./install

MATLAB was installed to /usr/local/MATLAB/R2023a

Had to do restoredefaultpath; matlabrc first time opening MATLAB. Then I clicked "Save" in the path dialog. Hopefully that will prevent future can't find path errors.

Installed PTB for MATLAB

I think when I installed the MATLAB-specific version from NeuroDebian, it overwrote the Octave-specific version.

I did this:

sudo apt-get install matlab-psychtoolbox-3

Made symlink to Datapixx.mexa64. Before this, a copy of Datapixx.mexa64 from the psychtoolbox-3 subdirectories was being used by MATLAB, and it wouldn't do Datapixx('Open'). Now it works.

ProceduralGarboriumDemo.m and VBLSyncTest.m work great.

Tested 3DPixx with MATLAB PTB

Tried HolesCrowd_PTB_3StimCrowd_TEST.m with the VPixx LCD glasses. It was somewhat better than with Octave. There was still a dark band at the bottom of the screen, but it stayed at the bottom, so that its problem is that it causes a distraction, but not interference with the stimuli themselves.

The glasses did flicker noticeably, which is a bigger problem.

I checked the script, and this is the script that has Datapixx('SetVideoStereoWaveform',0) like I
used with Octave last Friday.

Update (2024-02-06 13:20): The display had become set to 85 Hz somehow. I reset it to 119.8 Hz, and the flickering went away. The dark horizontal bar persists, however.

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