

GazeStereo3D: Seamless Disparity Manipulations - Demo

1. Intro

This is a manual for the SG 2016 paper “GazeStereo3D: Seamless Disparity Manipulations” demo. It demonstrates our real-time eye-tracker powered stereo remapping technique on several static image and video sequences.

2. Prerequisites

The HW required to run the demo:

- Reasonable CPU (Core i5+) and RAM (8GB+)
- Reasonable dedicated GPU – only tested on NVIDIA and likely only works on nVidia
 - Needs support of OpenGL 4.3 (uses compute shaders), i.e. GeForce 660 or better (tested on 760)
 - 2 GB of VRAM is definitely plus but may run on 1 GB also
- (Optional) Polarized 3D screen like Zalman ZM-M240W (the one I had on my right side)
 - Can also work with any screen in anaglyph mode but the quality is poor
 - Parameters are now fixed for 24” screen size
 - + Polarized glasses
- (Optional) Tobii EyeX eye tracker (should be on that screen where I left it)
 - Requires USB 3.0
 - Alternatively can use mouse to point but that is not very interactive

The following SW is required or recommended:

- Windows 7 x64 or newer (tested on Windows 7 only)
- Latest GPU drivers (tested with February 2016 NVIDIA drivers 361.91 but does not matter that much)
- MS Visual Studio 2015 with updates OR MSVS 2015 Redistributable x64 (included in /Support)
- Tobii EyeX Driver – tested with version 2.0.3.239 – included in /Support directory.

3. Startup

Should be as easy as double clicking the *SeamlessRemappingDemo.exe*. Should start in full screen (Fig. 1). On multi-screen setups use [V] key to switch between screens (defaults on secondary screen because that was convenient for me and maybe for others too). If you use anaglyph glasses (poor) then you have to use [B] to switch the output. Then it should already work.

If there are some errors they may be written to the console which you can see using Alt+Tab. Probably they would be about GLSL shader compilation (with old drivers etc.). Or it just simply crashes like one would expect from C++ application.



Figure 1: The initial view on the application (in anaglyph).

4. Controls

Use of the application is quite self-explanatory. By default there is a 3D image, text menu with all keyboard controls, gaze location as a white dot and disparity with mapping curve in the left corner (orange = in front of screen, blue = behind, black line = current mapping, red line = ideal mapping), see Fig. 1.

The controls are:

- [H] – Hide/show the menu (most of it)
- [J] – Hide/show the disparity inset
- [K] – Hide/show the gaze (white dot)
- [M] – Switch stereo mapping (right now just Ours and Static = input = nothing)
- [D] – Switches between image/video mode
- [S] – Switch the image/video (6/4 in total), can go back with Shift+S
- [Q] – Switch the model multiplier – basically makes everything go faster. Default is 2.0.
- [W] – Changes another parameter of the model, the recovery limit. Higher values mean more aggressive remapping. 1 s is default and quite enough.
- [E] – Scales the disparity. 1x is default, 0.5x or 2x maybe, 4x definitely not.
- [T] – Switches between mouse and eye tracker (if available).
- [R] – Resets the model (e.g. if everything goes black because of some division by zero)
- [V] – Switches between monitors
- [B] – Switches between polarized glasses and red-cyan anaglyph glasses
- Resolution – reports the output resolution. Should match the screen if detected properly.

- FPS – gives the number of FPS. On every reasonable GPU it should give 60.
- Ctrl+Shift+F – bonus shortcut to switch to window mode – not supported officially and the polarized mode will not work there.