Guide to Using the

XREAL Beam Pro

By George Themelis, aka DrT

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Outline

- **What is it?**
  - Basic Description
  - 3D Specifications
  - Set-up and Change Defaults
- **The Camera Application**
  - How to Take 3D pictures & video
  - How to Preview them
  - How to Transfer them to a Computer
- **The Positives**
- **Concerns**
- **3D Viewing & Useful apps**
- **Tips: Take better 3D pictures**
- **3D Photo Gallery**

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What is it?

- **Android device**

  XREAL (Chinese company)
  Model = **Beam Pro**

- **Has two lenses (50 mm apart)**

- **Takes 3D pictures & 3D video**

- **Available on Amazon USA:**
  - 6G+128G: $197
  - 8G+256G: $246
  - 8G+256G (5G): $296

I got mine in Sept. 2024 after I saw nice 3D pictures posted on Facebook by Gert-Jan Wolkers. I had it less than a year and already have taken some interesting pictures with it.

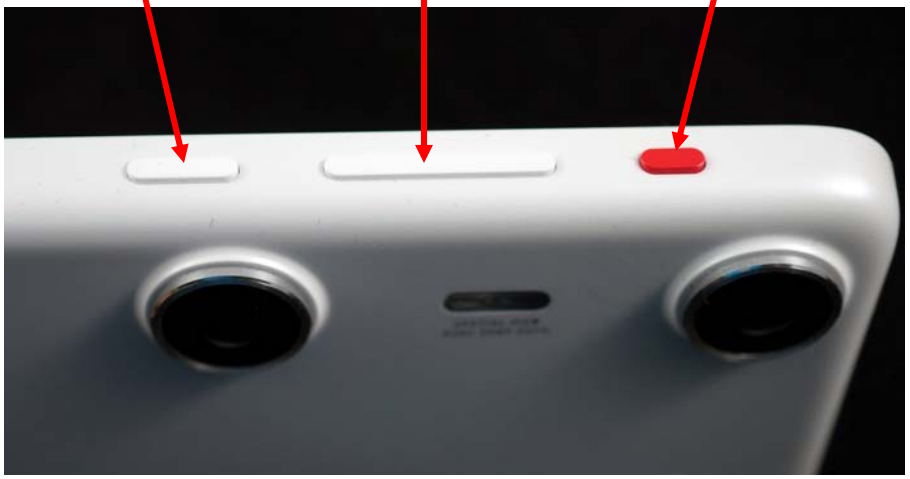
3D Specifications

- **Stereo Base: 50mm**
- **Field of View: Ultra-wide** (~18 mm equiv.)
- Lenses **fixed focus** (in 3D) and **fixed aperture** (f2.2)
- **Still 3D pictures: jpeg** (SBS 2x3840x2880 pixels 11 MP per side, 4:3 aspect ratio. The size of images is ~ 4-6MB)
- **3D Video: mp4** (SBS 2x1920x1080, 60 or 30 fps)

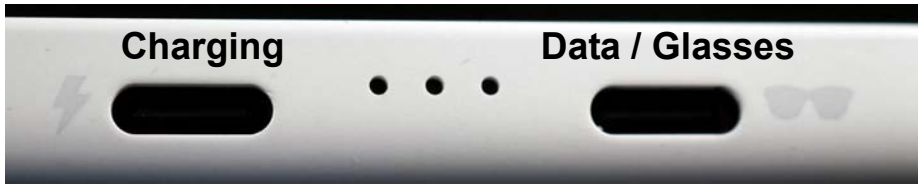
Note: The device can also take 2D pictures and there are more camera/photo options in 2D (picture format, aspect ratio, use of LED light, video, etc.). Also, the left lens focuses in 2D but it is fixed in 3D.

XREAL Beam Pro Controls

TOP

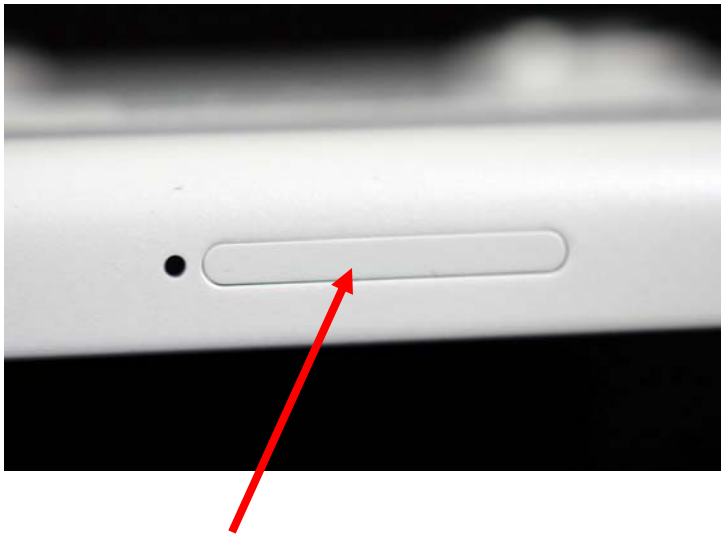


RIGHT SIDE



2x USB-C Ports

BOTTOM



Micro SD Tray - The device comes w/128 or 256 GB of internal memory. It can take micro SD cards up to 1T.

XREAL Beam Set-Up

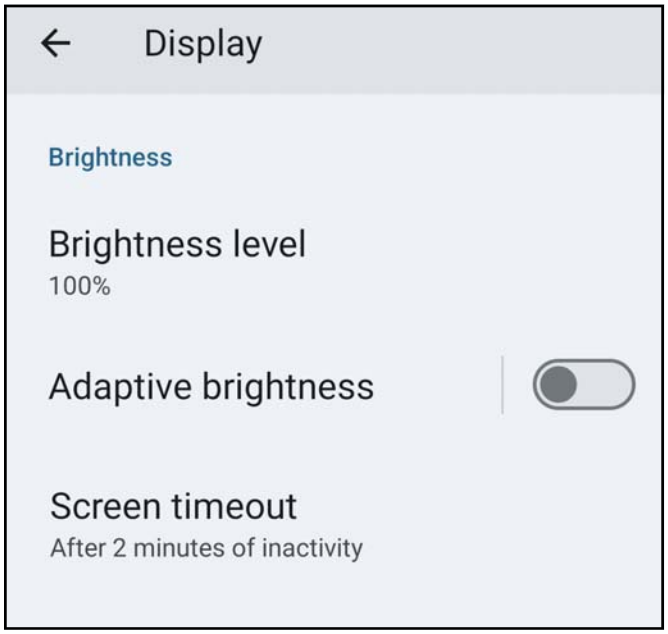
Similar to setting up an Android Phone

PIN (locked) or NOT (unlocked)?

It is easier to use as a camera without a PIN (unlocked) however sensitive data (email, google account, etc.) can be accessed by others.

Change Default Settings

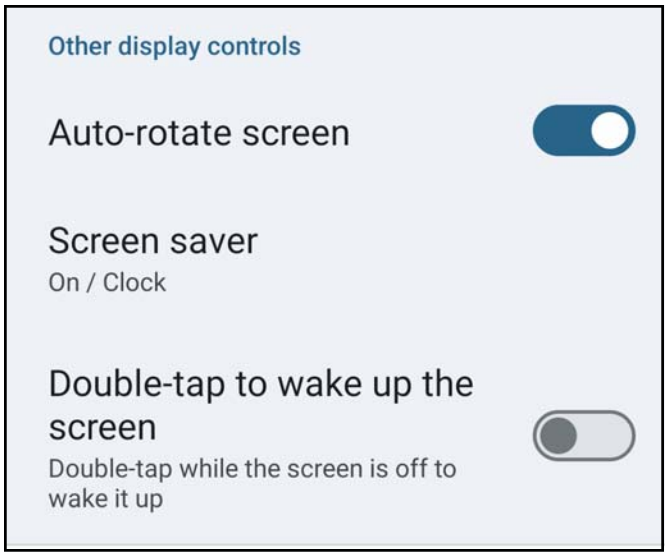
Goal: Operate more as a camera and less as a phone



Turn **Adaptive brightness off** and set brightness at 100%.

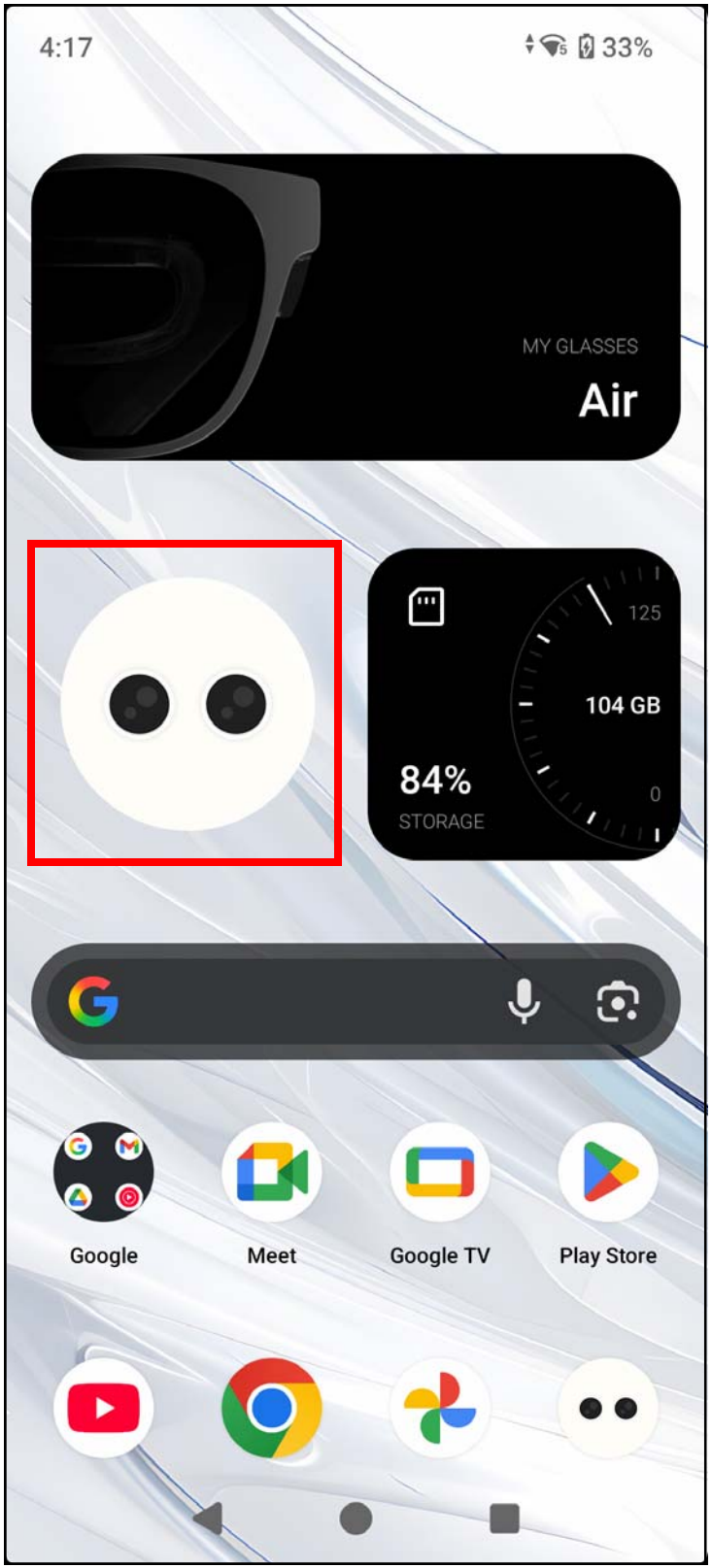
With these settings I have no problem seeing the screen during daytime

Change **Screen Timeout** to 2 or 5 min
(the default is 1 min which is too short for me)



Turn **Auto-rotate screen ON**

Turn **Double-tap to wake up the screen → OFF**. The XBP will not turn on unless if you press the power button, which is how cameras work.



Camera App

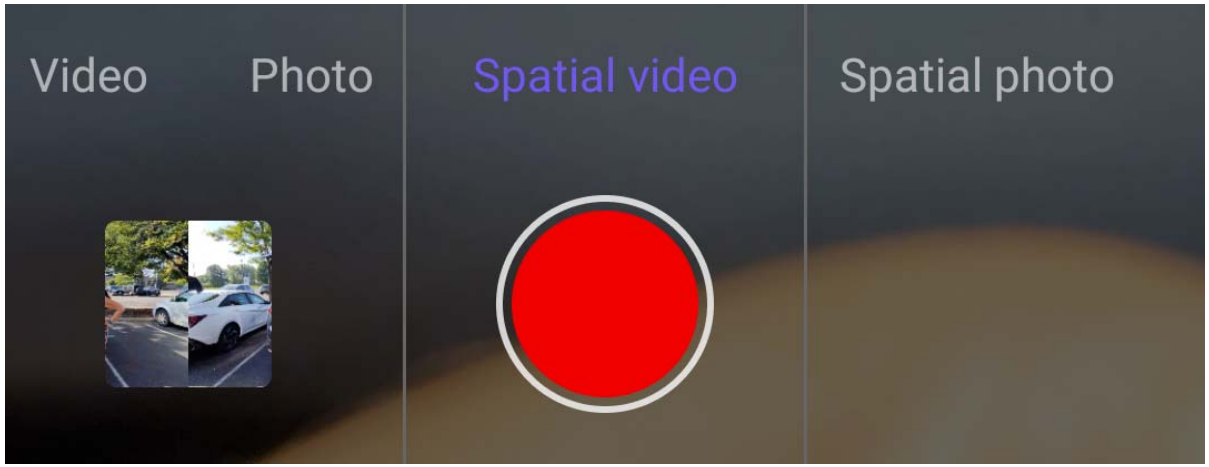
Useful shortcut:

Double-pressing the power button brings the camera up

- If the device is unlocked, **this always works**
- If it is locked, then you have to enter the pin and bring up the camera at least once. Then this shortcut works until the device is shut down.

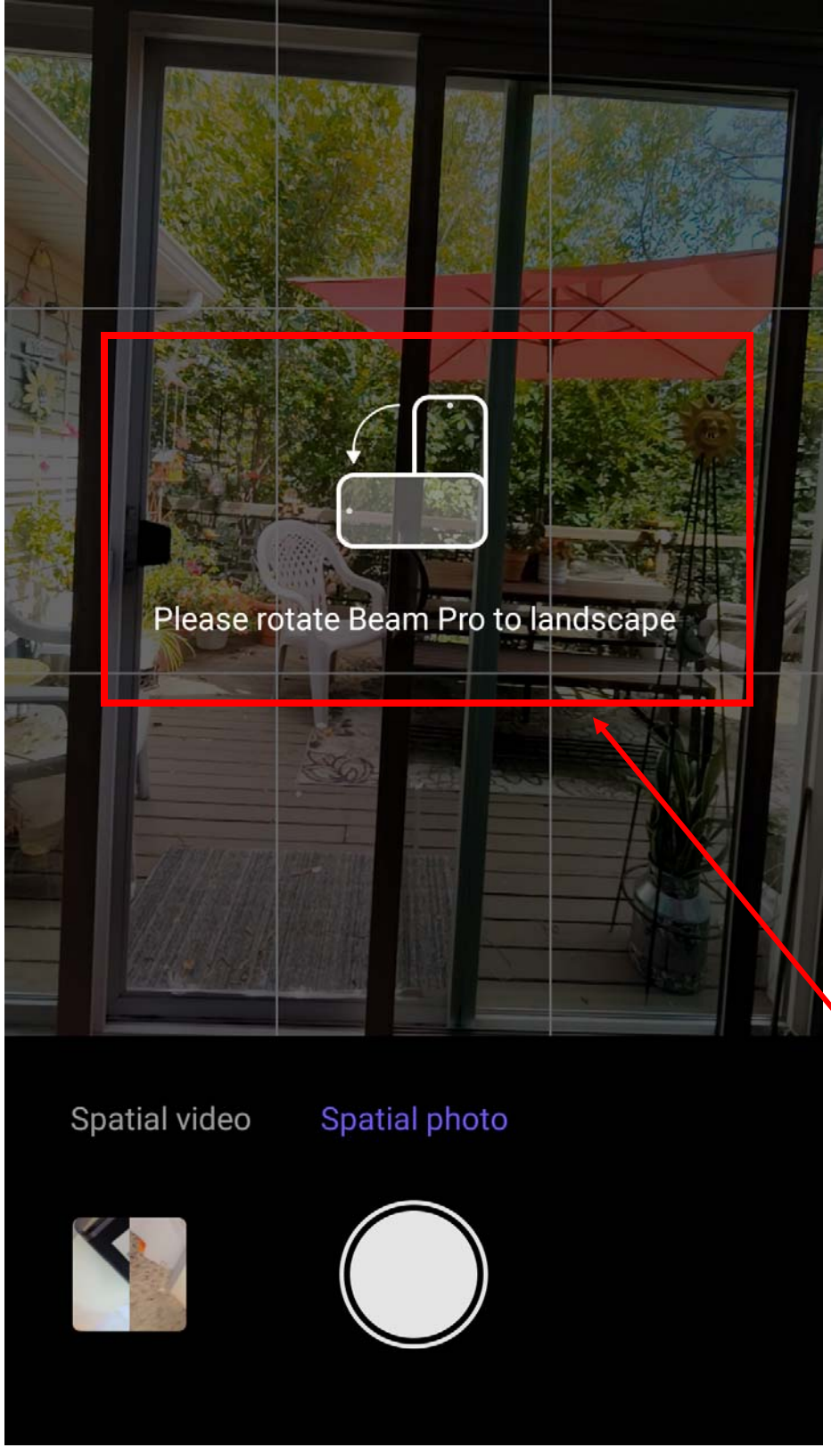
Camera App: Taking 3D Pictures

Video = RED button, Picture = WHITE button



4 Choices:

- **Video**
- **Photo**
- **Spatial video**
- **Spatial photo**



2D or 3D?

- When the camera app first comes up, **the default is 2D**
- Make sure that you are taking 3D pictures!
- There are ways to tell that you are in 2D vs. 3D

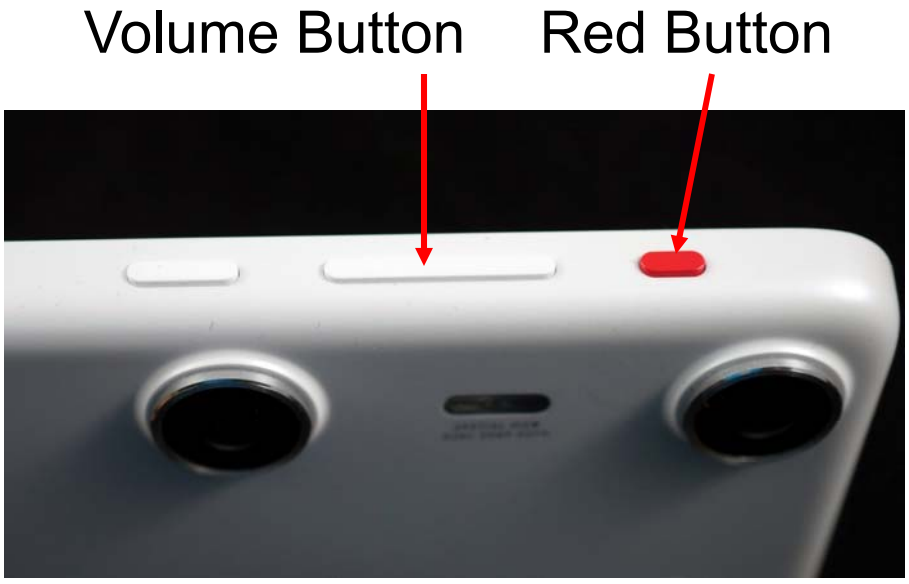
If you are in a 3D mode and you turn the device vertically, the screen dims and displays this message. **You can still take 3D pictures!**

4 Ways to Take a Picture

These are universal for all phones

- **Tap the on-screen shutter button**

- **** Press the volume up or down buttons**
- **** Press the red button**



- **Use a Bluetooth camera shutter remote**
  (BT shutter remotes work by activating the volume button)

** Note: Shutter fires when the button **is released**!

Two Viewing Modes in 3D

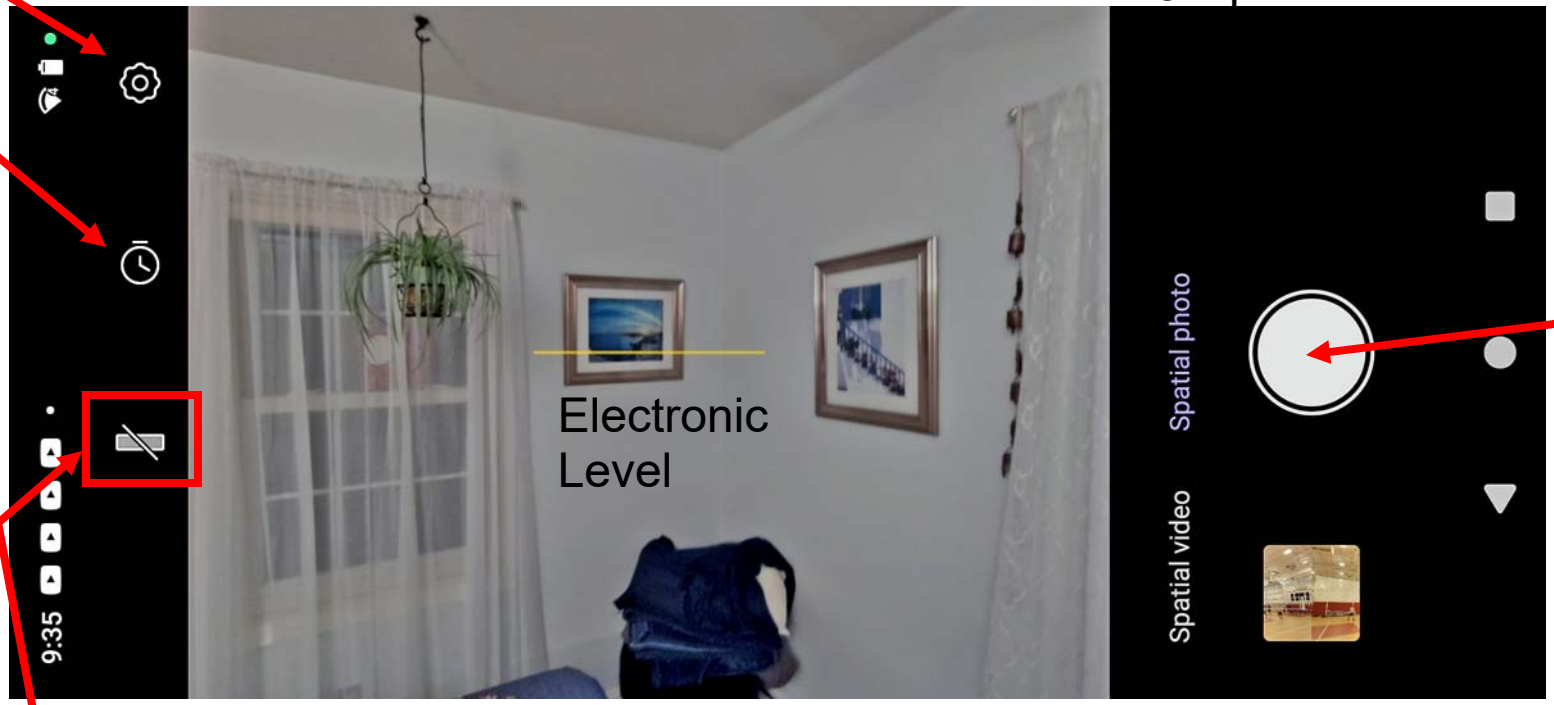
Settings

Timer

Single Image Viewing

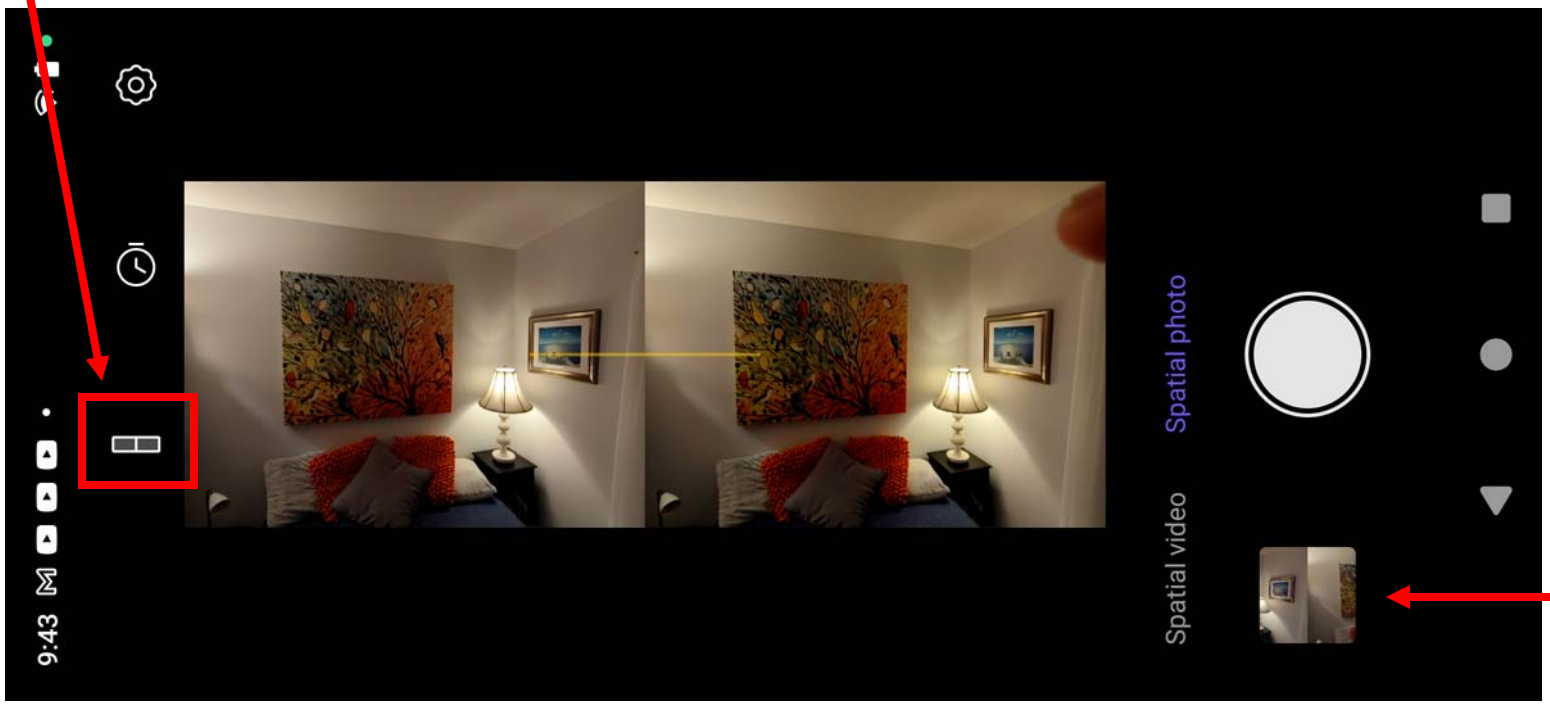
Toggles Viewing screens

View of the Left Lens - camera still takes 3D photos



Shutter Button

3D (side-by-side) viewing



Picture Preview

Camera App: Viewing 3D & Editing

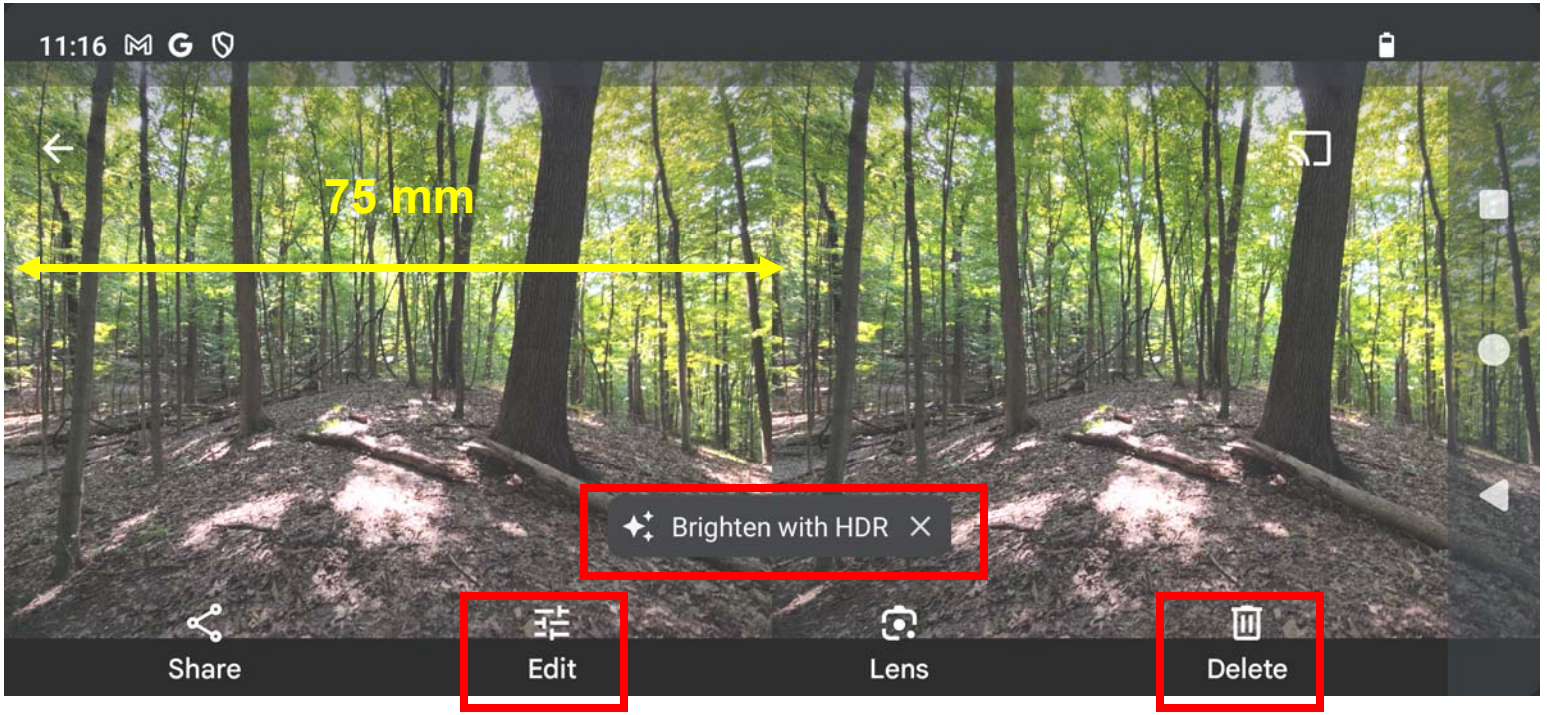
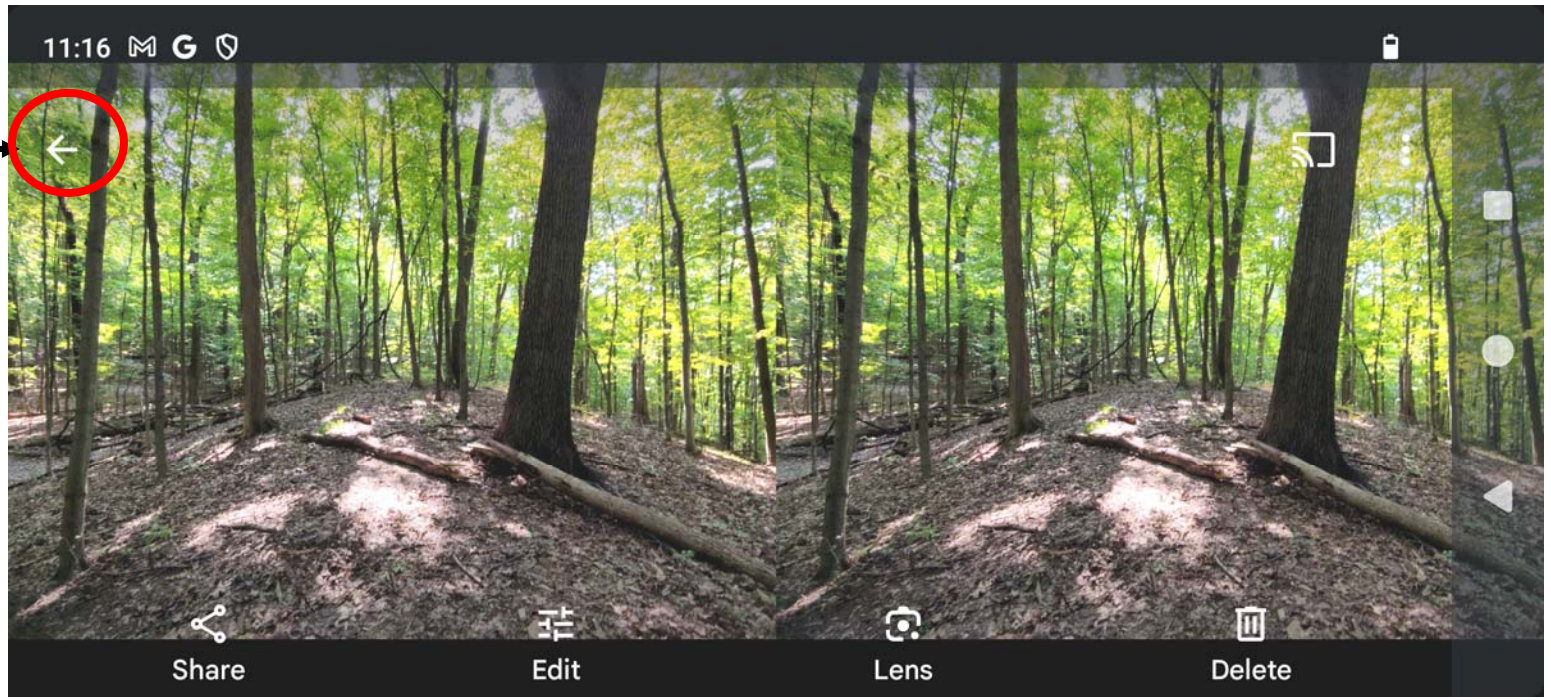


Image preview shows the pair side by side. The size of each side is 75mm

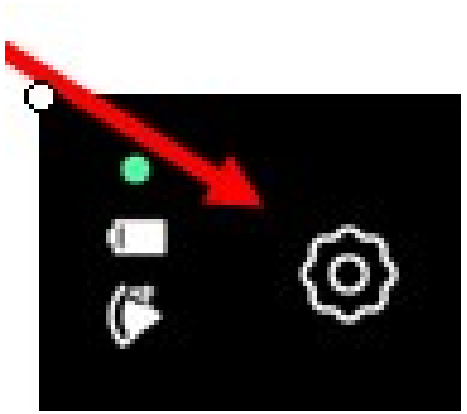
Occasionally you see suggestions for improving the picture. You can touch it, make changes and save a copy. You can also touch the Edit option for more on-camera

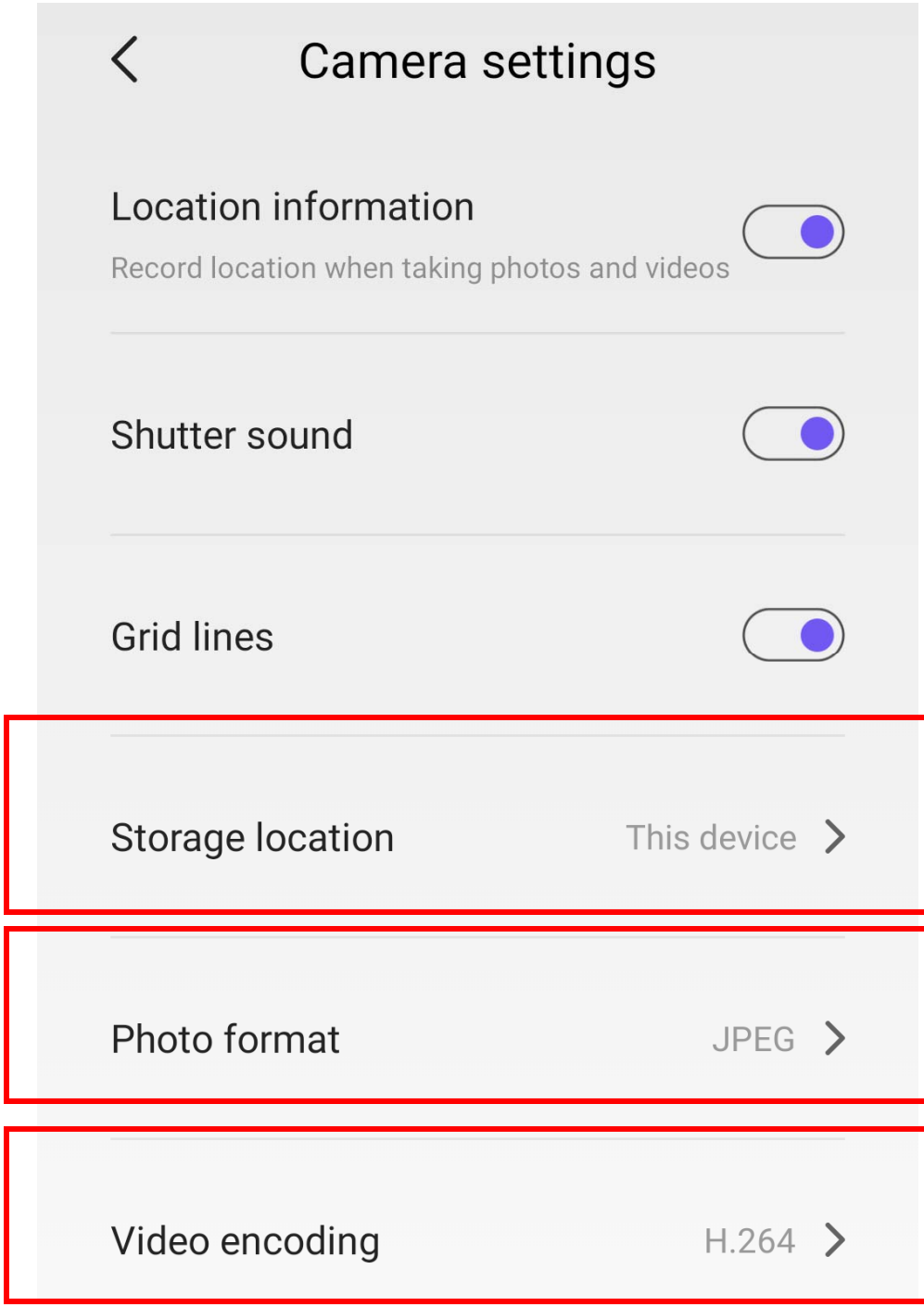
Returns to recording screen



PS. Taping the screen removes the information and only leaves the image

Camera App Settings





Shutter sound serves as a verification that the picture was taken, but sometimes you don't want it, so you can turn it ON and OFF

Grid lines help to keep vertical lines vertical

- **This device** (internal memory)
- **Memory Card**

- **JPEG**
- **HEIC**

Testing shows that there is no difference

- **H.264**
- **H.265**

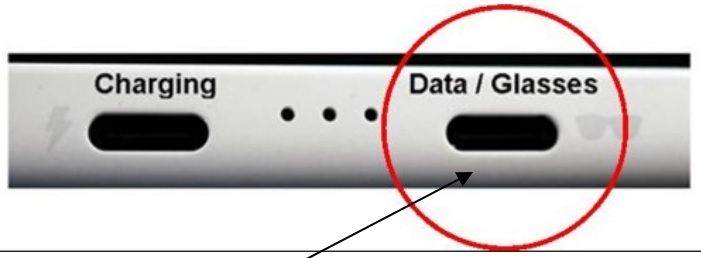
Some software will not play H.265

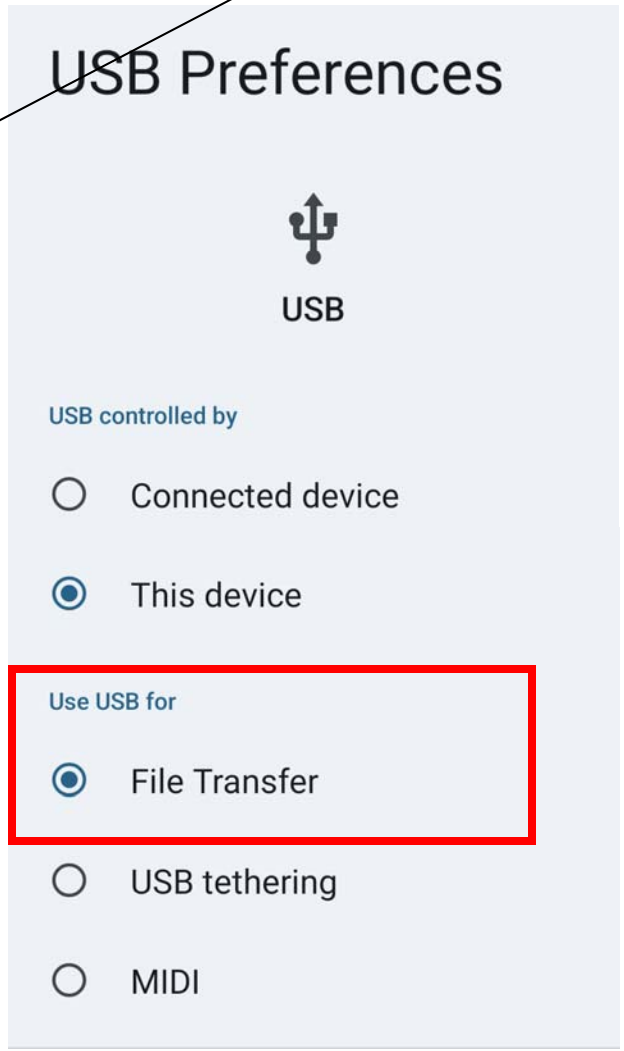
How to Transfer Pictures to Computer

1. Store photos in micro SD card

2. Wireless transfer (eg. Google Photos)

3. Direct Cable Connection





1) Use a USB-C cable that allows **data transfer**
   (some cables only allow charging)
2) Plug the cable to the **"glass" USB-C-port** of the XBP and to the computer
3) Go to Settings > Connected devices > USB > select "File Transfer"

   Note: this is an Android security feature and you have to do it every time. There is a way to avoid this step by turning on "Developer Options" (I have not done that).

You should see a folder **Beam Pro** > **Internal shared storage**

Open the **DCIM** folder and then the **Camera** folder

All the pictures and videos are stored there.

Where are the pictures stored and how are they named?

Pictures are named by the clock time (examples):

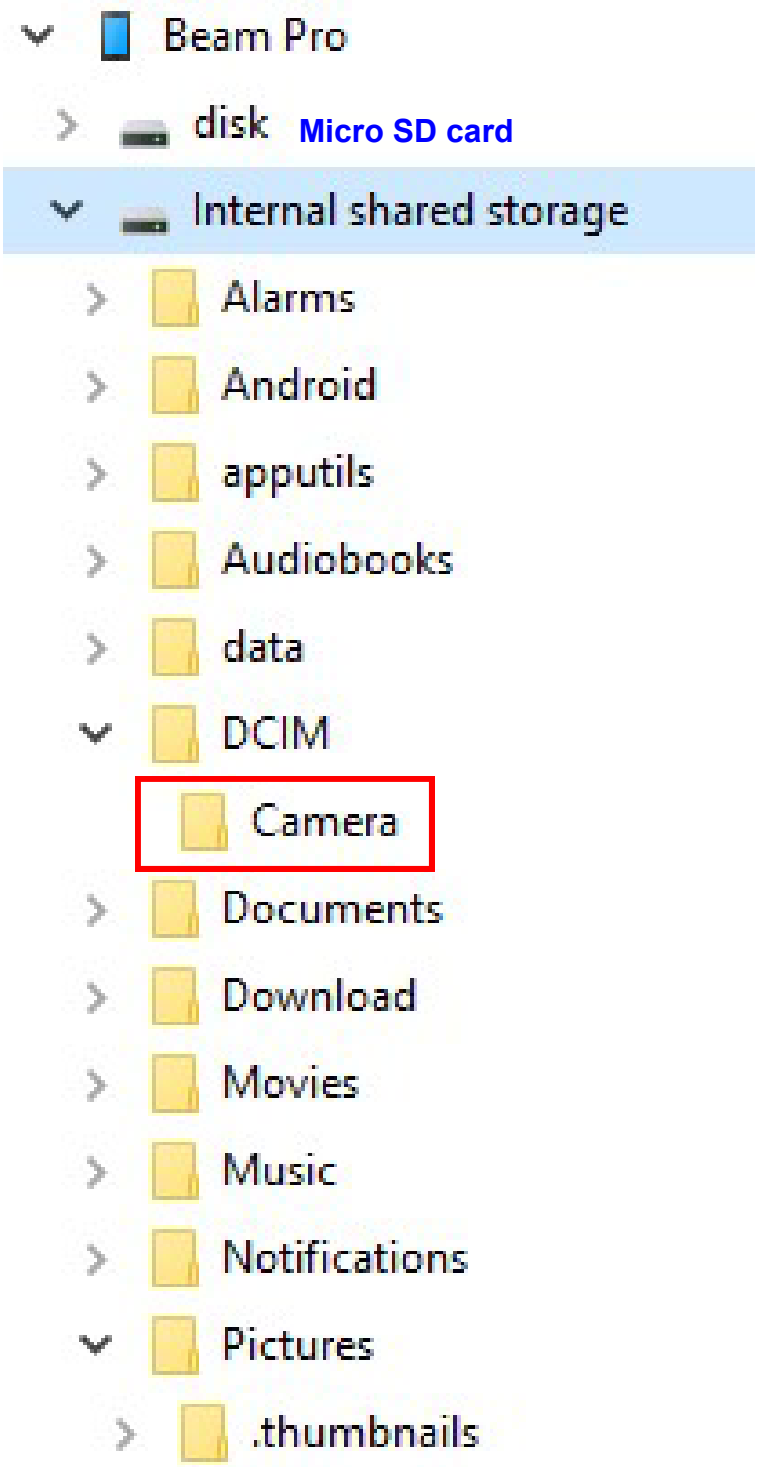
- 3D Still Pictures: **SV**_20241031_113259.**jpg**
- 3D Video: **SV**_20241031_113648.**mp4**
- 2D Still Pictures: **IMG**_20250809_185551.**jpg**
- 2D Video: **VID**_20250808_155847.**mp4**

SV_20241031_113259 was taken on 2024/10/31 at 11:32:59

Because files take their name from the XBP clock, **make sure that the clock is correct**. If not, they will be stored somewhere else. The clock is checked/corrected when the device is connected to the internet.

Because 3D pictures and video have the same names and only different extension, they are shown sequentially mixed up, in the chronological order that they were recorded.

Folder Structure



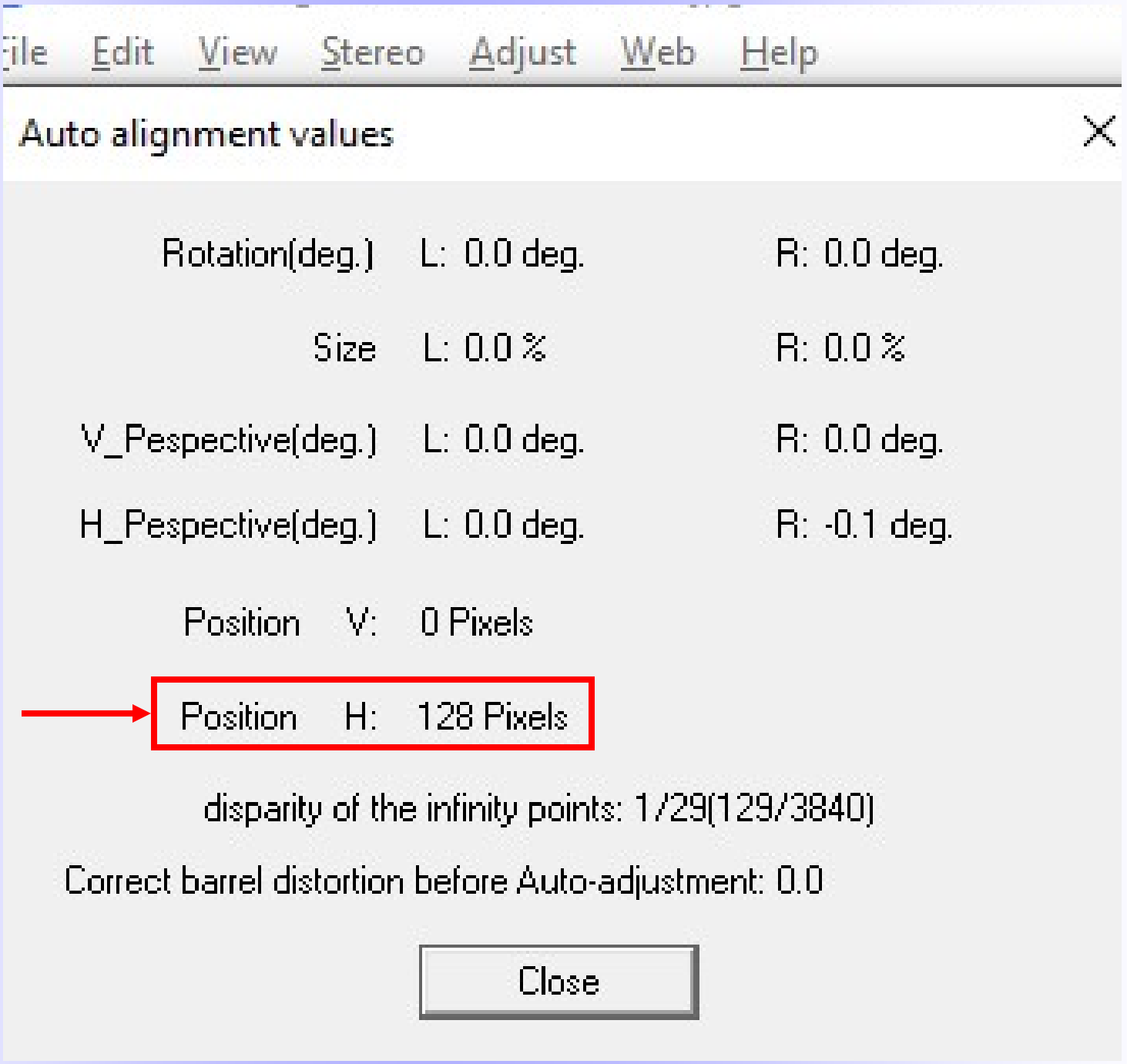
First Look: The Positives

- **Phone Form & Functionality**
  - Does not attract **attention**
  - **Compact** & **easy to carry**
  - Can be used by **anyone**
  - **Water** & **shock** resistant
  - Good **battery life**
  - **Automatic exposure** & **stabilization**
  - Can use standard **phone accessories**
- **Easy to Use** (both physically & format wise)
- **Good Quality** of 3D pictures & 3D video
- **Good for a variety of 3D pictures** many not possible with a standard 3D camera

Perfect Alignment

The raw data must be processed using alignment data for the specific unit, stored during manufacturing & testing. The result is a processed and aligned jpg file.

Except for the Stereo Window which is at infinity



XREAL BP Auto Exposure

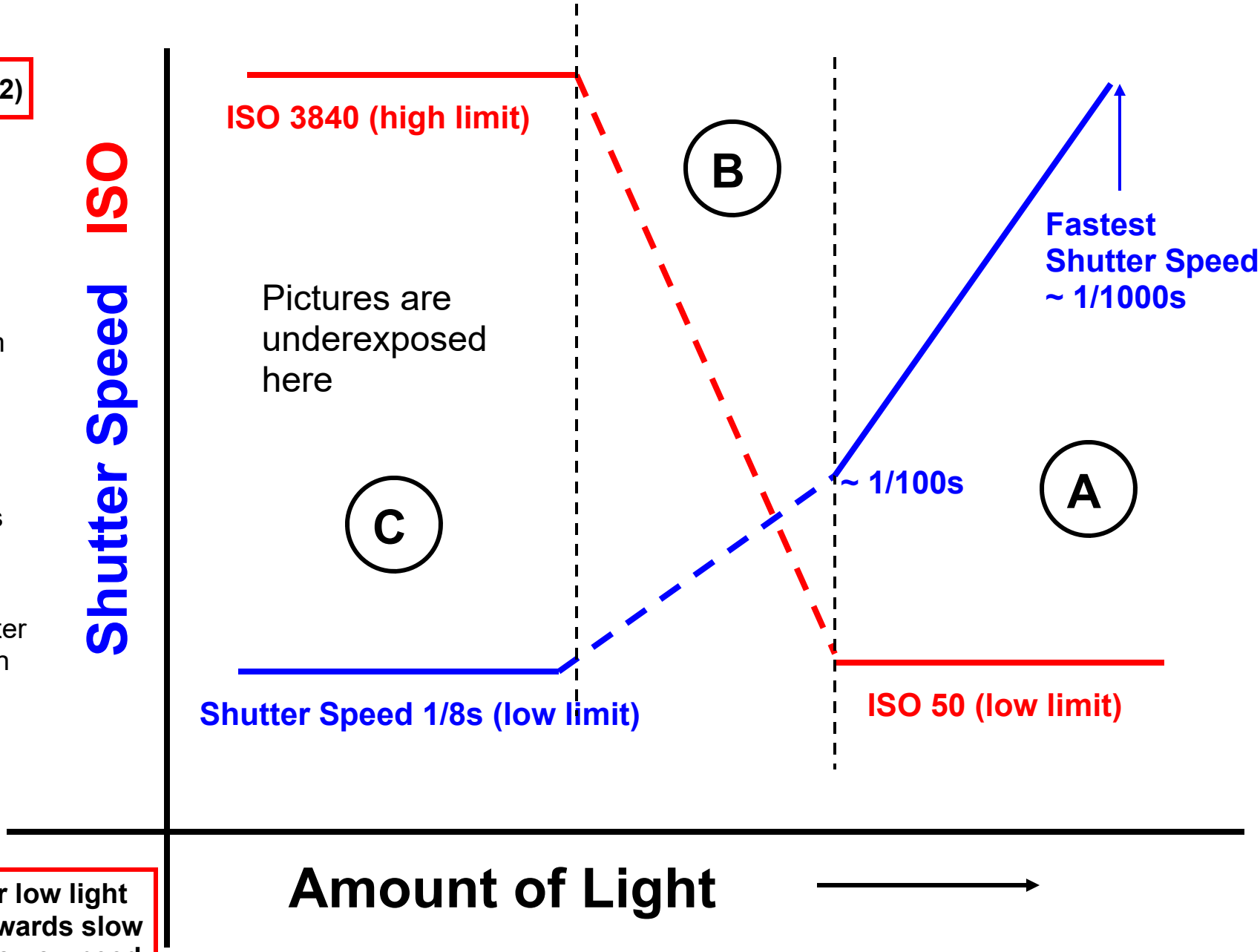
Aperture Fixed (f2.2)

Shutter Speed and ISO change

A: Good light. ISO fixed at 50. Shutter speed changes from 1/100 to about 1/1000s

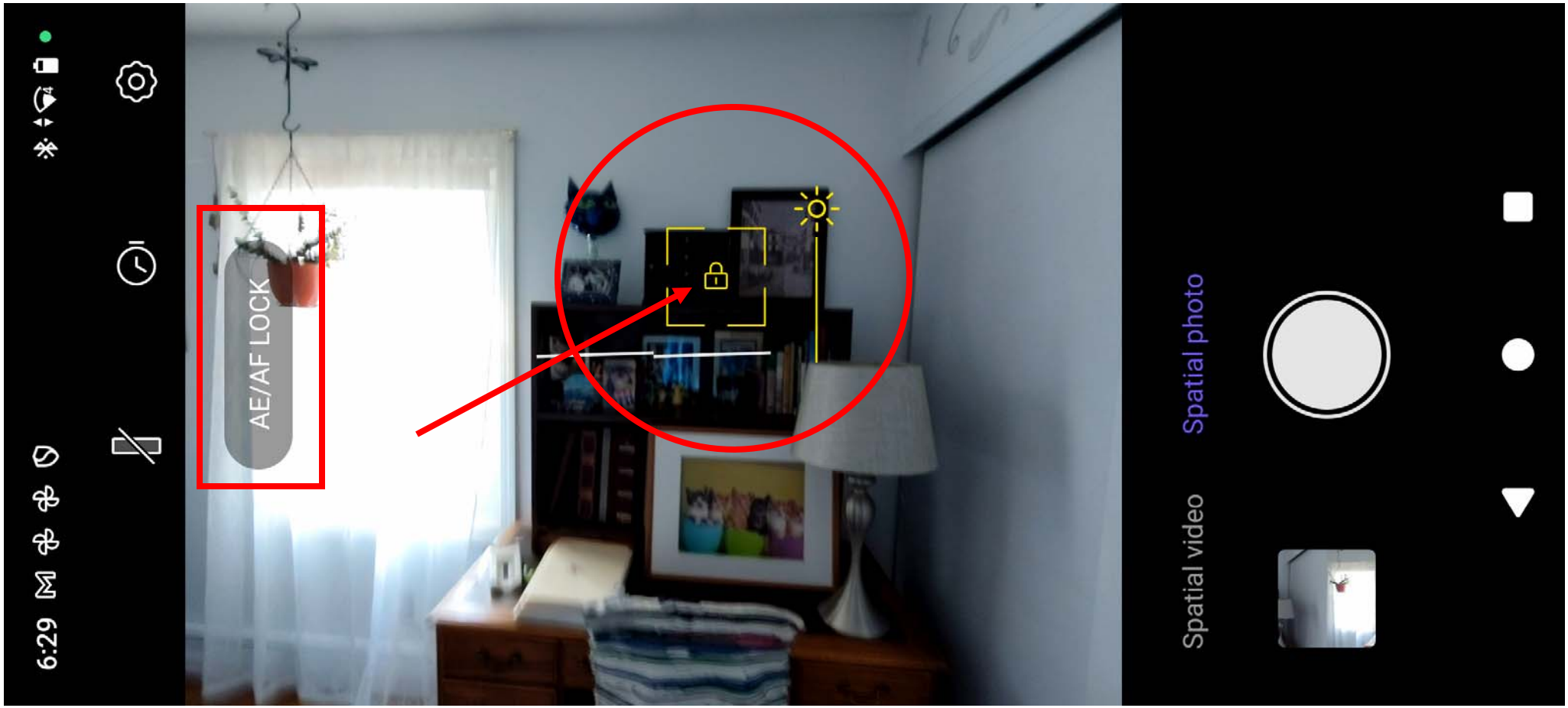
B: Transition: Shutter speed drops and ISO increases.

C: Low Light: Shutter speed bottoms down to 1/8s and ISO peaks at 3840



WARNING: Under low light there is a bias towards slow shutter speeds so you need to be careful!

Exposure Adjustment



- In **single image viewing mode**, **touch the screen**. This will create a square and adjust the exposure of the area outlined. **Hold your finger** and **exposure is locked** (see picture)
- **Adjust** the exposure by **sliding the "sun" scale**. Recompose.
- (The exposure will stay locked until the screen is touched. It will stay locked even if a picture is taken.)

Automatic Exposure

Reduced Exposure

Automatic Exposure

Overexposure should be corrected during shooting because details can be lost

Underexposure can be corrected with photo editing

It is better to underexpose and correct later than overexpose

Increased Exposure

XREAL Beam Pro White Balance

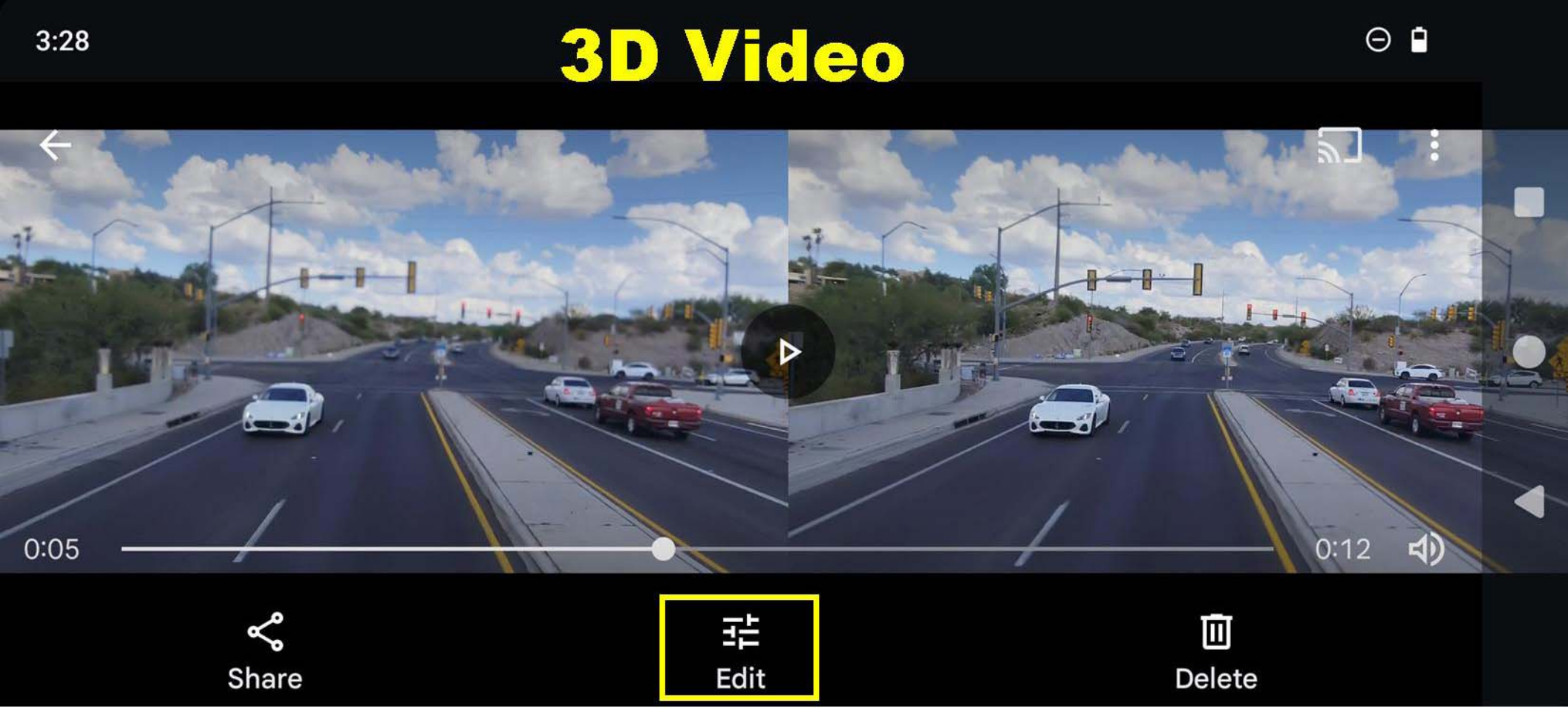
AUTO White Balance

Corrected with Editing

If a color dominates the picture, the XBP will try to “neutralize” it, as in this picture

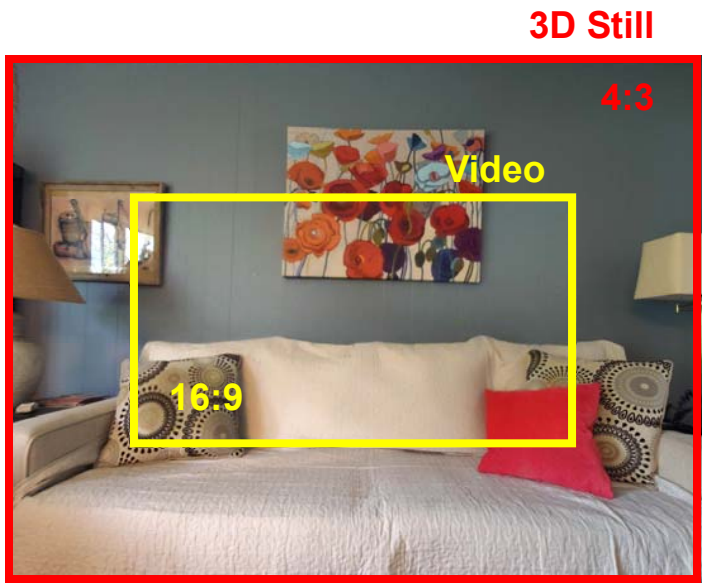
Plethora of Accessories

3D Video



- **Perfectly aligned** (except for the stereo window)
- Very nicely **stabilized**
- Effective Focal Length ~ **35mm** (much easier to work with)
- **Simple format**, easy to edit with 2D Video Editors
- Some **editing** is possible in the device (crop, adjust exposure, change speed, capture/**export a still 3D frame**)

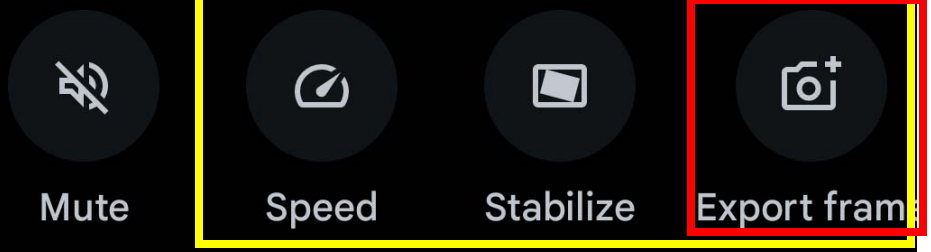
Just the 3D Video is worth the XBP price

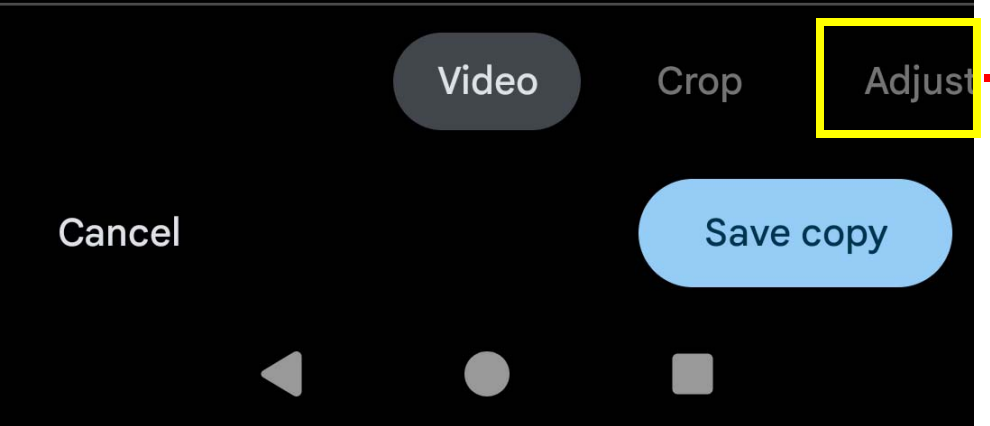


Hit Edit, then:

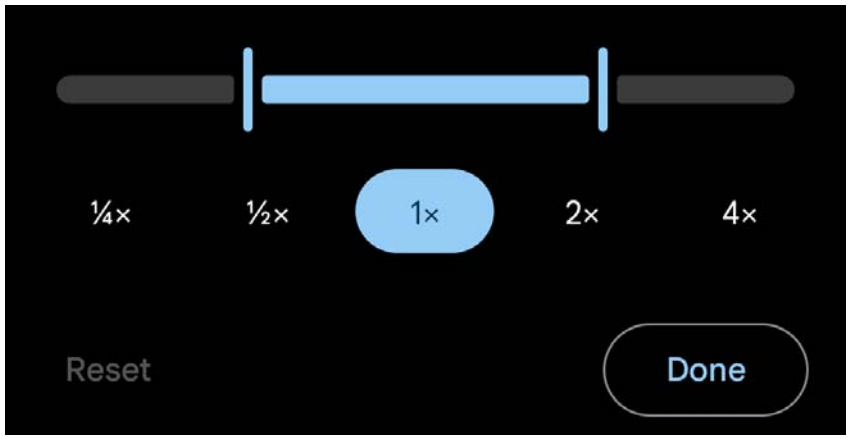
- Select start/end points
- Change speed
- Adjust levels, etc.
- Save a copy - also Export Frame

00:05 / 00:05

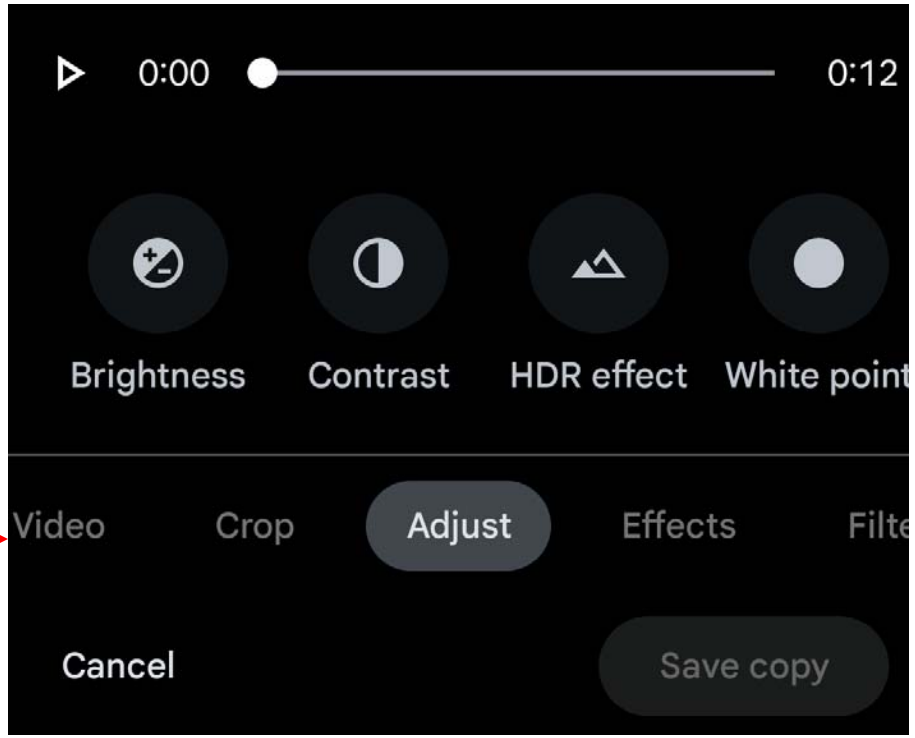




Change Speed



Adjust levels, etc



When done, save a copy

Questions / Concerns

- Stereo base (50 mm) is too narrow
- Field of view (18 mm equiv.) is too wide
- Wide Angle Distortion
- Not enough depth
- No camera controls
- No 3D screen
- Image quality?
- “This is no better than what I am using now”

Not Enough Depth

XREAL vs. FUJI

	Stereo Base	Focal Length
XREAL	50 mm	18 mm
FUJI	75 mm	35 mm

Depth = (Stereo Base) x (Focal Length) / Distance

XREAL (50x18) / FUJI (75x35) = 0.34

XREAL shows ~ 1/3 of the "depth" of the Fuji

** for the same distance of near/far objects

To increase Depth: **Get closer !! 2.1 m → ~ 0.7 m**

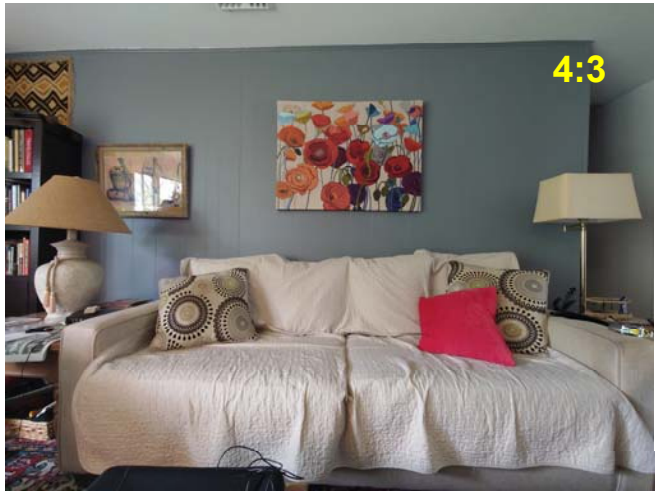
or closer if there is no infinity

XBP Field of View

Full Fame Equivalent Focal Lengths

- **H: 19 mm**
- **V: 17 mm**
- **D: 18.5 mm**

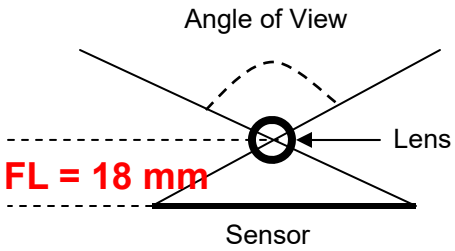
2D Stills ~ 15mm



3D Stills ~ 18mm

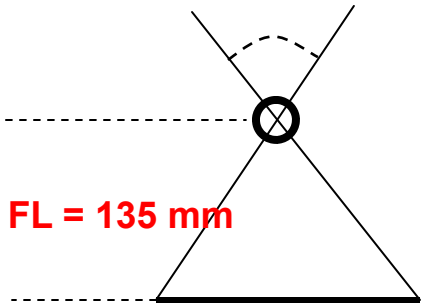
3D Video ~ 35mm

WIDE Angle Lenses



- Short Focal Length
- **Wide angle of view**
- Small image size

LONG (Telephoto) Lenses

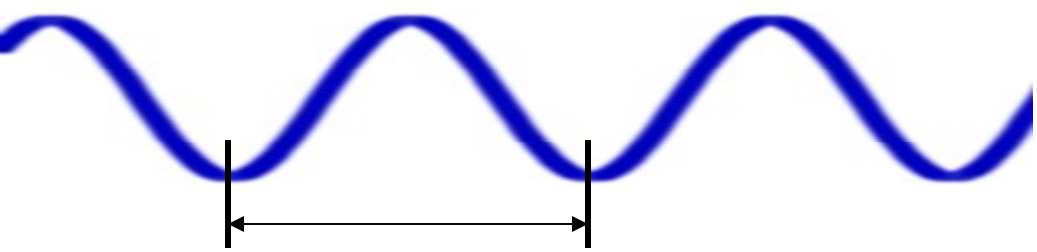


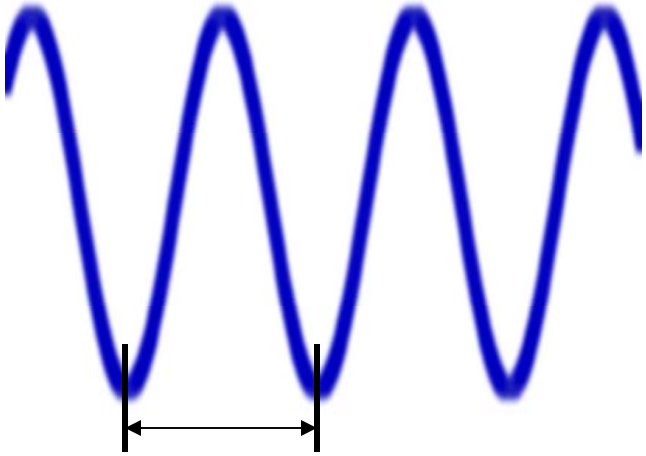
- Long Focal Length
- **Narrow angle of view**
- Large image size

Expand Space

The space expansion / compression is due to the recording distance being a lot smaller (or larger) than the viewing distance.

Compress Space





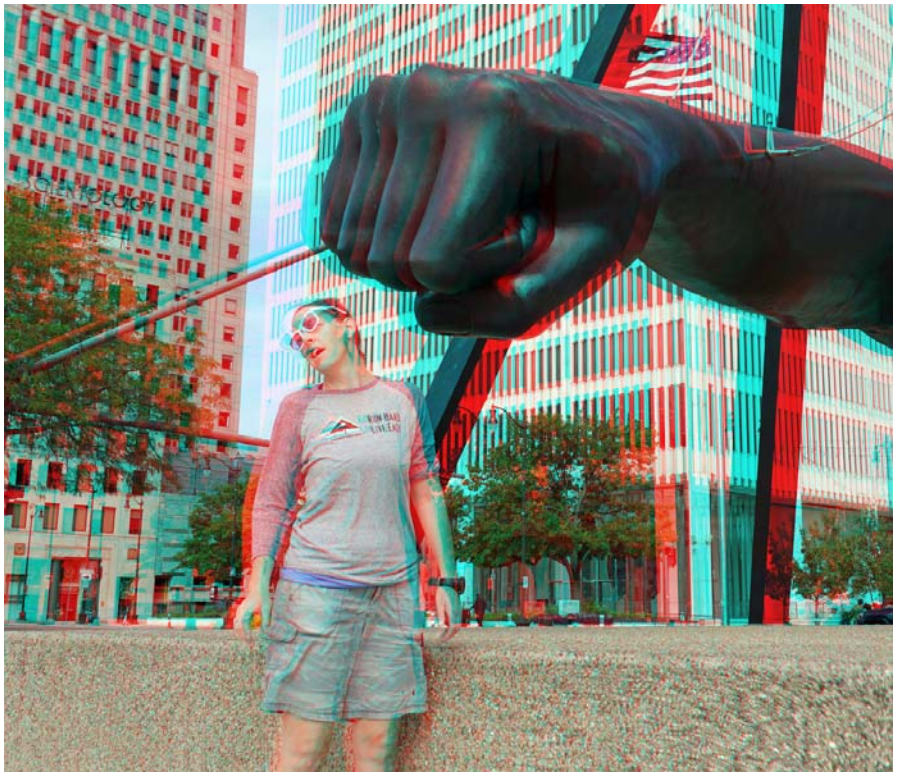
Emphasize Foreground

The emphasized foreground is the result of getting very close to the near object.

“The Detroit Fist”

Monument to Joe Louis, in downtown Detroit USA

Normal 3D camera



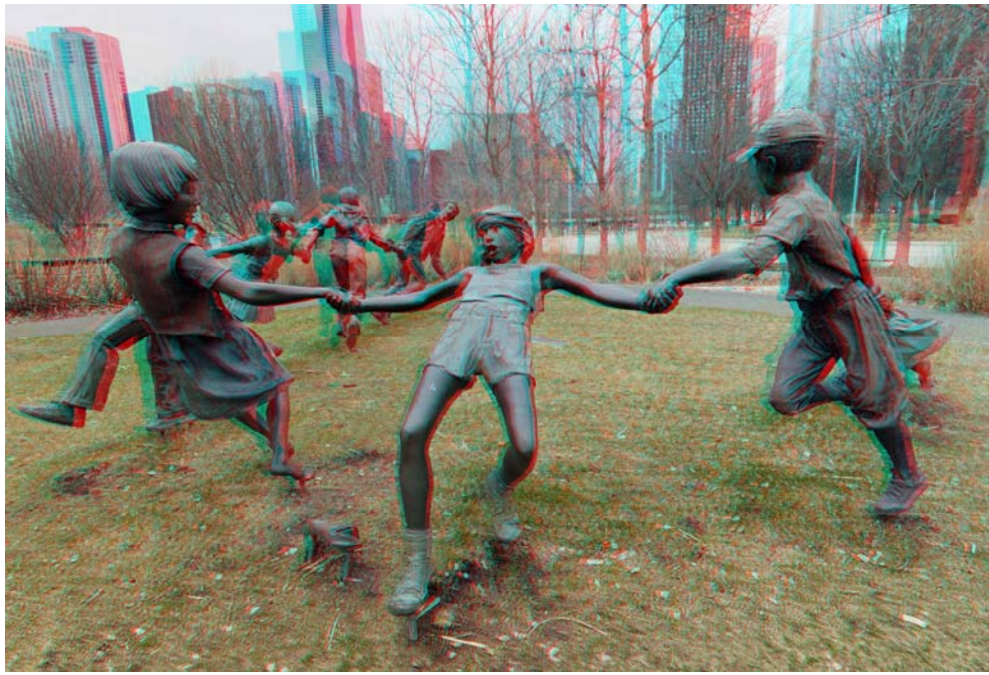
One of my most successful XBP pictures. It has received the “Best 3D” Award in the 2025 Hollywood International 3D Exhibition.

Compared to a normal 3D picture, the fist is exaggerated, the arm looks small, depth is stretched. A lot of buildings are included in the background and their convergence adds to the impact. This is the result of using an ultra-wide lens, coming really close to the near object, and tilting the camera to look up.

Navy Pier, Chicago IL

These pictures cannot be taken with a "standard" 3D camera.

XBP's ultra wide lens includes a lot of the background (top) and creates interesting effects when photographing the statue (below).



No choices for Aspect Ratio or FL

Some users find the FOV too wide and wish that the camera had:

- **A choice of different aspect ratios**
- **A choice for different FL (24 mm, 35 mm, etc.)**

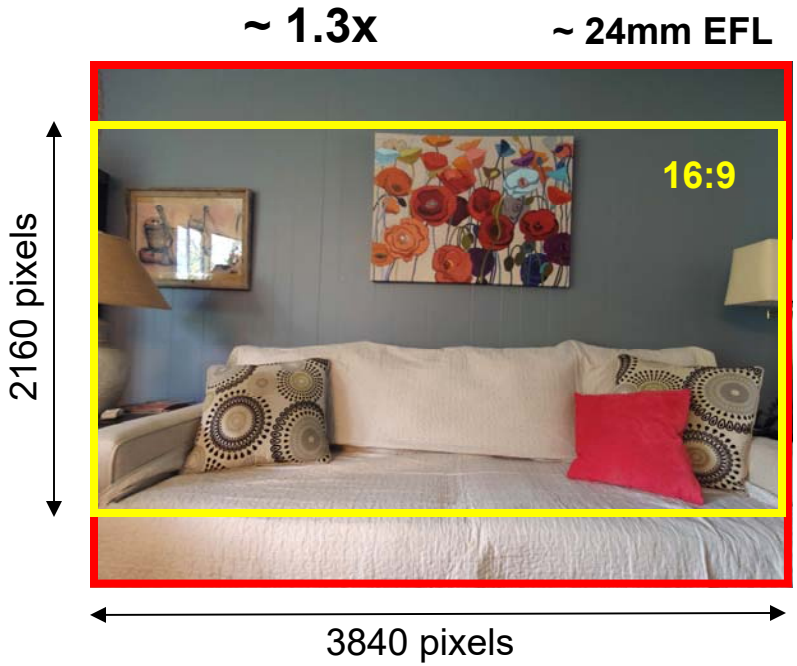
Since the camera only has one pair of lenses any change in aspect ratio or FL must be done by cropping (digital zoom)

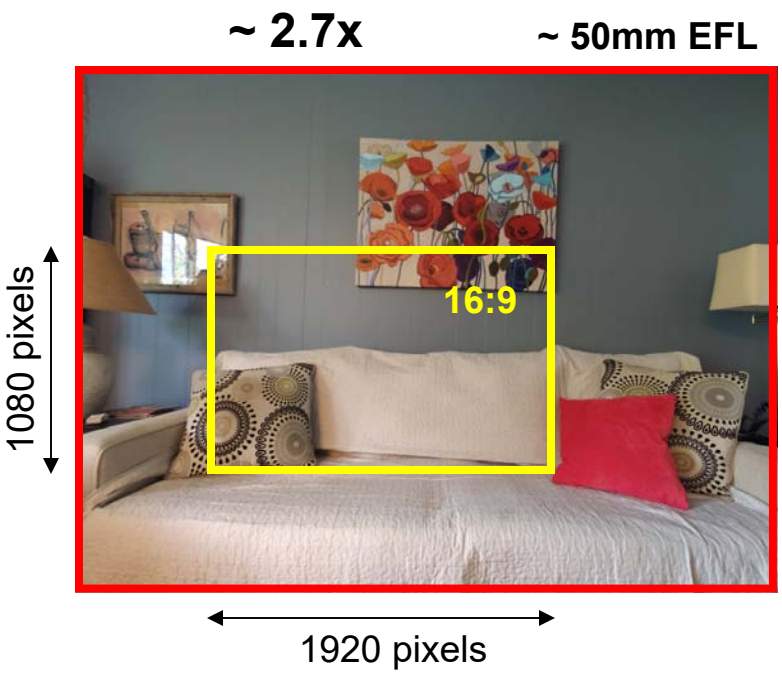
The question is, who does the cropping?

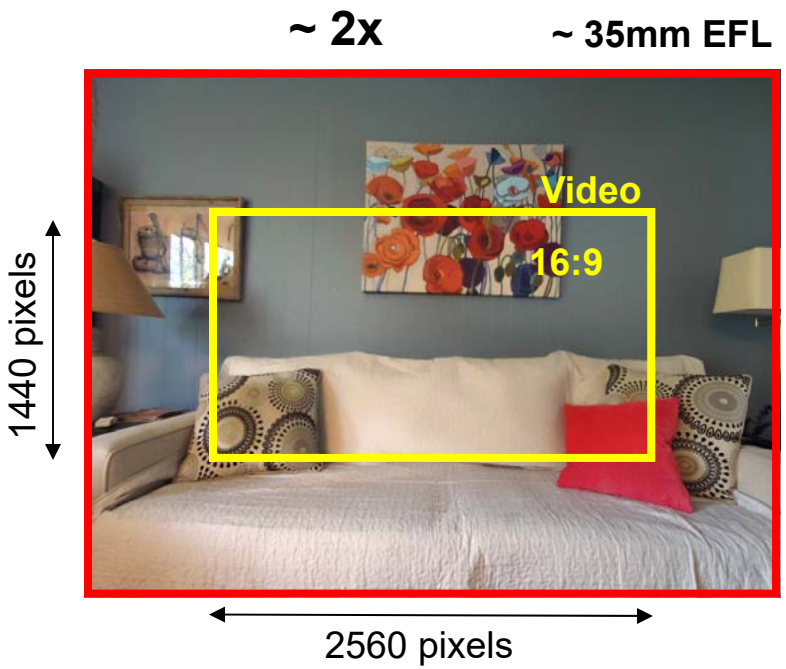
- **The camera**
- **The user**

Having a choice of FL and AR is convenient, but the advantage of the user doing the cropping is that **they have the choice** to select any area, vs. the center that the camera selects by default.

Cropping increases Effective Focal Length







Simple cropping from 4:3 to 16:9 aspect ratio changes the EFL ~24mm

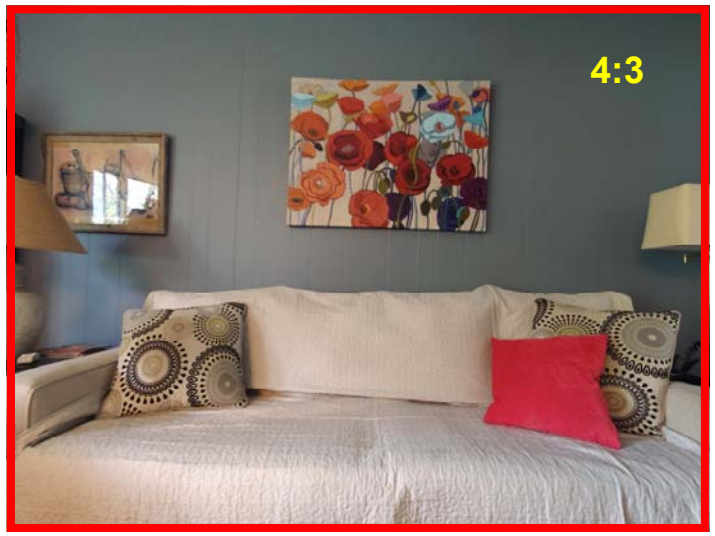
Maximum cropping maintaining HD resolution (1920x1080) EFL ~50mm

In-between, a 2x enlargement results in an EFL ~35mm

(This is the same as the video frame. The resolution is ~2560x1440 pixels but in video the camera resizes this to 1920x1080)

XREAL BP FOV: 3D Stills vs. Video

3D Stills ~ 18mm EFL



2880 pixels

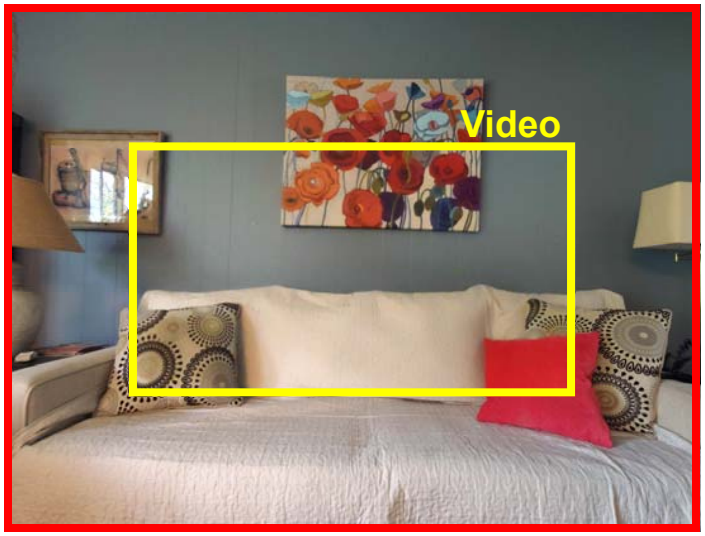
3840 pixels

~ 2x

3D Video ~ 35mm EFL

1080 pixels

1920 pixels



If the XREAL BP was just cropping the original frame, the resolution of the video frame would have been ~2560x1440 pixels. The camera resizes this to 1920x1080.


Distortion
Concerns

Pincushion Distortion

Example of Pincushion Distortion
NOT from the XREAL BP

Careful testing shows that **the XBP does not have any distortion**


Perspective “distortion”
Normal Perspective exaggerated by the use of ultra-wide angle lenses and tilting the camera down


Camera was
tilted down

Original **“Distorted Image”**

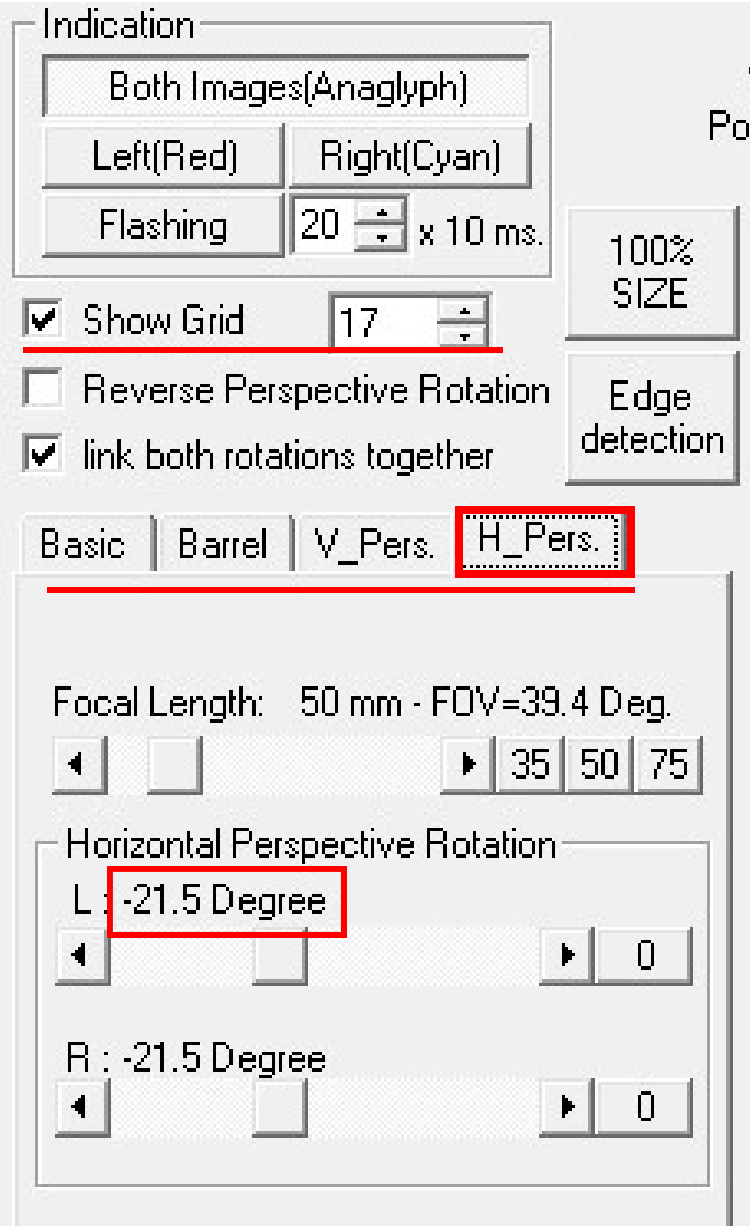
Note the converging lines in the back, a normal perspective, exaggerated by the wide angle lenses. This was caused by tiling the camera down.

Corrected with SPM

Using SPM Horizontal Perspective Rotation you can straighten the vertical lines. This automatically removes the distortion of the faces.

SPM Easy adjustment (shortcut “K”)

Not “easy” or intuitive but very powerful.
Can correct rotation errors (“Basic”), vertical or horizontal perspective, and barrel distortion.

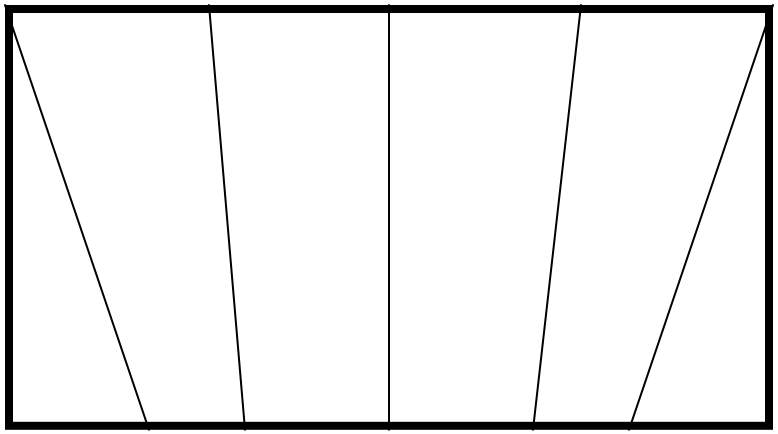


Slide the scale until the converging lines become parallel

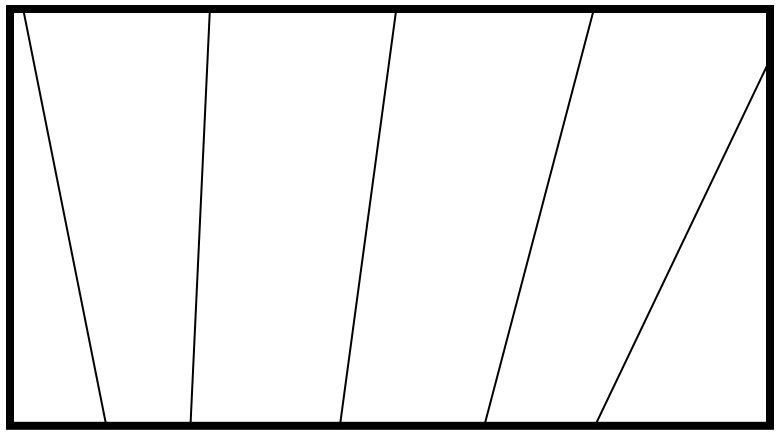

When photographic a subject lower than eye level:
Instead of tilting the camera down, lower yourself making sure the camera stays parallel
Look for parallel lines and make sure they stay parallel
(do not converge). And get close !!

Perspective “distortion” with Rotation

No Rotation



With Rotation



- **“Correct” Rotation** (first)
- **“Correct” Convergence**
- Note: **These “corrections” introduce errors** so only do them to a small degree
- **Size “distortion”** (objects closer to the camera appear larger)
- **These “distortions” are found in ALL lenses** but they are exaggerated when using ultra-wide lenses
- **Do I need to do these “Corrections”?**

  NO!! (only when it is necessary)

Questions / Concerns

- **Stereo base (50mm) is too narrow**
- **Field of view (20mm equiv.) is too wide**
- **Wide Angle Distortion**
- **Not enough depth**
- **No camera controls**
- **No 3D screen**
- **Image quality?**
- ***“I don’t want to have to carry this and a phone”***
- ***“This is no better than what I am using now”***

Grip
Shutter Button (removable)
Tripod Screw
Cold shoe
Storage for cable
Selfie mirror or LED light

Viewing 3D

Viewing the Screen

- **Freeview**
- **Use a Viewer** (stereoscope)

Spacing of lenses (75mm) is **wider** than the spacing of the eyes (65mm)

Prismatic Lenses

- Vintage
- Modern
- Large
- Compact

Symmetric Lenses

Lite OWL

IA ≥ 75 mm

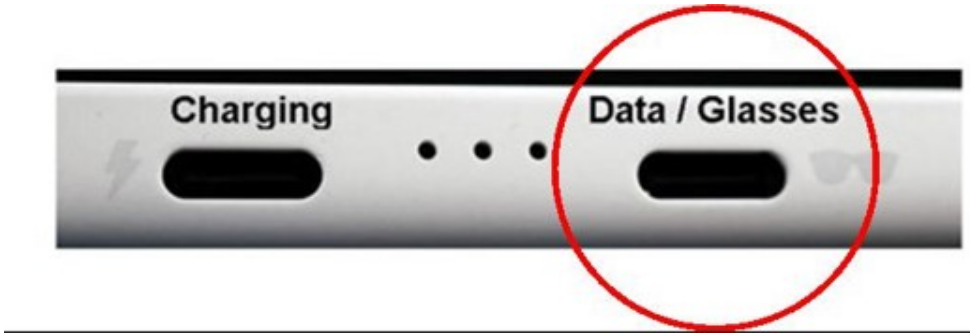
FL ≥ 100 mm

Requirements for a simple stereoscope to be used with the XBP:

- **Interaxial Distance:** 75mm or longer
  (this is a requirement)
- **Focal Length:** 100 mm or longer
  (it is a matter of comfort. A short FL shows pixels and it is harder to fuse the images.)

Viewing 3D

Using Glass Port



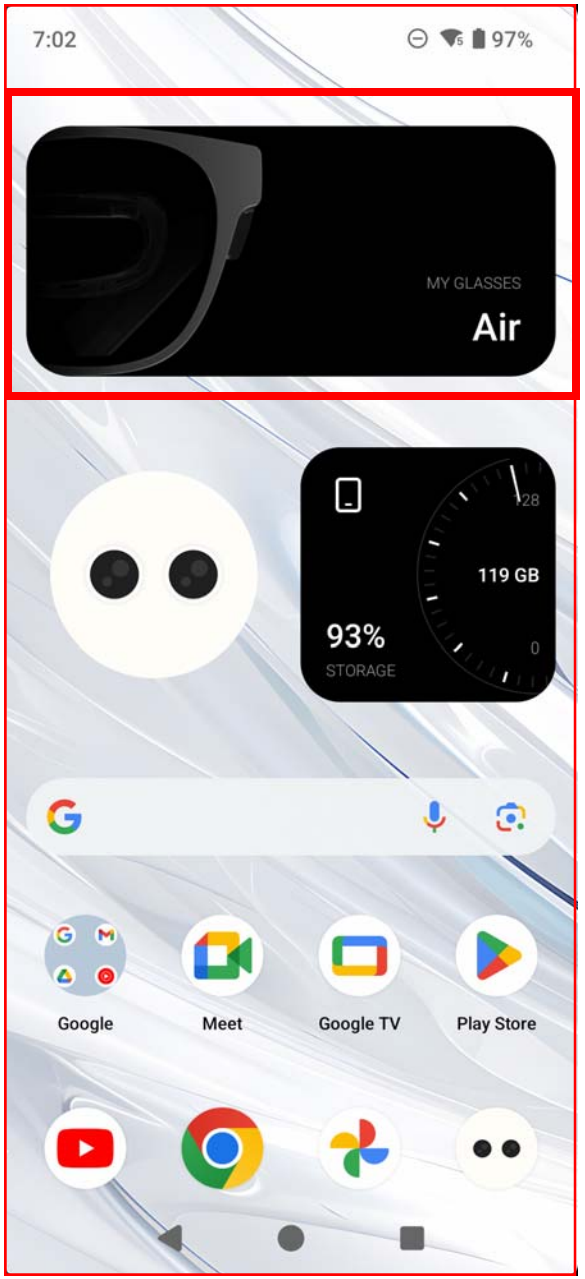
- **3D computer monitor**
- **3D TV**
- **3D projector**
- **External 3D Viewer**
  (GOOVIS for example)
- **3D Glasses** *(XREAL & others)*
- **Looking Glass**

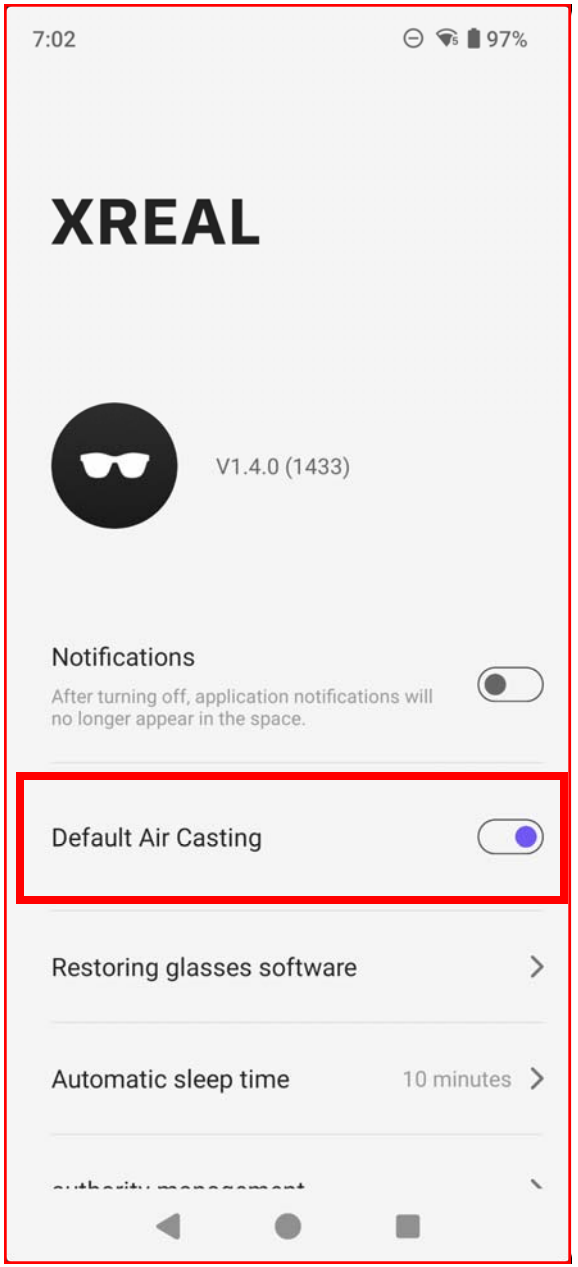
Goovis Art

How to use Air Casting

With the AIR Glasses

- Open the Glasses App
- Turn Default Air Casting ON
- Plug the glasses into the port (at this point you should be seeing a 2D image of the screen)
- Open the app and open a 3D photo
- Hold both the power and brightness buttons until you hear a beep. Release. After a few seconds you should be seeing a 3D image





Comments:

- There are two modes for the AIR Glasses: 1) **Air Casting**, 2) **Nebula OS**
- Air Casting is like an easy-to-use 3D viewer. I personally like it because it is simple, fast and easier to understand and I use it for viewing 3D pictures and video.
- Which mode the device goes into, depends on the setting of the “Default Air Casting” switch. Once set, it stays there, until changed.
- You can use Air Casting with the device’s Camera/Photo apps. However, there is a problem: The 3D image is formed at about 250mm (10”) from the eyes. It is somehow uncomfortable to view and spoils the 3D effect.
- The StereoPlayer forms the 3D image correctly (not close) plus lets you adjust the window, and pinch and enlarge, all nice options.
- When you use StereoPlayer, you do not see the image on the device screen (I hope this changes because it is useful).
- There are a few differences between the Standard and the High Performance Viewer (these are changed within the app), I mentioned earlier. The standard viewer does not preserve the window correctly but allows you pinch and enlarge. The HP viewer preserves the window, enlarges & crops the image to 9:16 image ratio (looks larger and nice) but does not allow you to pinch and enlarge.
- Some things are expected change as the app is updated.

XREAL Beam Pro as a

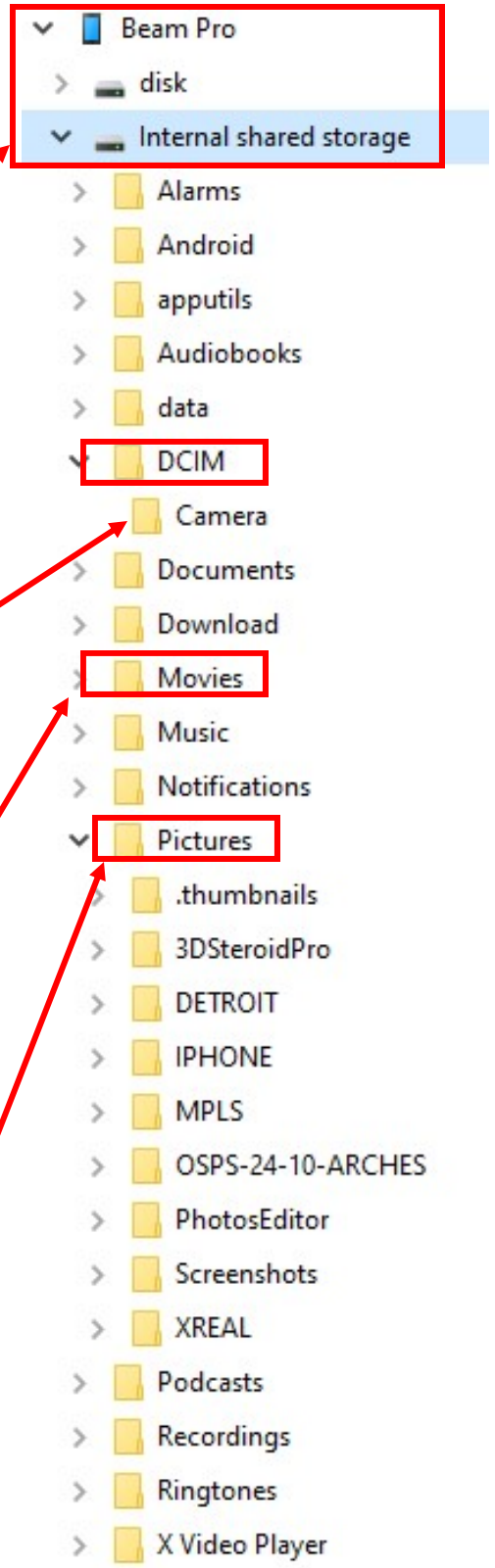
3D Media Player

The XBP has a large storage capacity:

- **Internal Memory**: 128/256GB
- **Micro-SD card**, up to 1T (1000GB)
  (a good choice is 256GB)

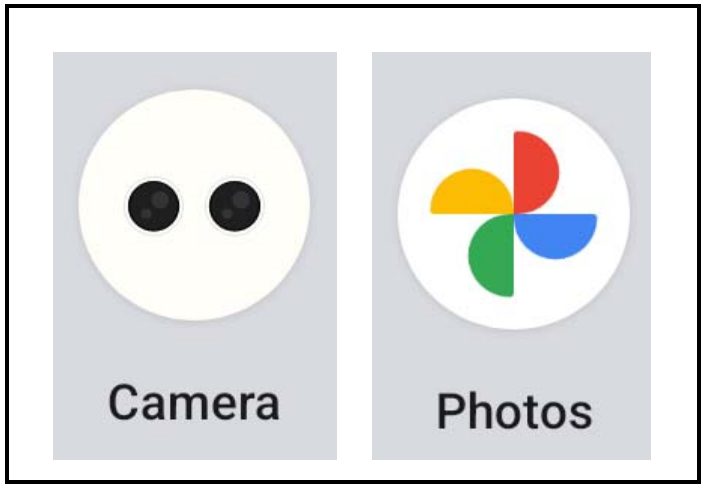
You can store 3D Content:

- **Pictures taken with the device**:
  - 3D Still Pictures
    Example: SV_20241031_113259.**jpg**
  - 3D Video
    Example: SV_20241031_113648.**mp4**
- **3D Movies**
- **Pictures/video taken with other 3D cameras**



Using Different Photo Apps

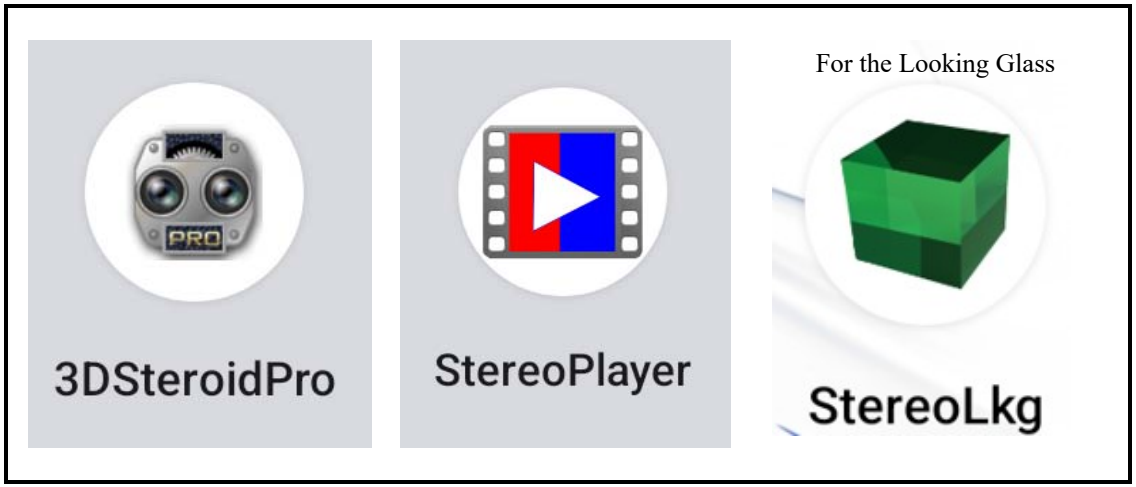
Native 2D Photo apps



As a viewing app starts always at the last picture taken and there is no navigation

Can navigate in different folders or pictures

3D Photo apps by Masuji Suto



3DSteroidPro

3DSteroid as a 3D Viewer

3DSteroid can be used a stereo viewing app, in addition to being a **3D editor**

Taping the screen removes the information and only leaves the image

- Different 3D viewing modes (parallel, anaglyph, half width, etc.)
- It has a **"Slide" mode** (images advance automatically, as in a slide show).
- The **volume button** can be used as an **image advance button** (back and forth)
- A **remote** (Bluetooth) shutter release can advance images (double-clicking advances to the next image, single-clicking reverses the direction of advance)
- The image can be **reduced in size** so the infinity separation is reduced from 75 mm to ~ 65 mm which then makes it possible to use just about any stereoscope

One limitation of 3DStereoid is that it can only play **still 3D images and not 3D video**
That's why Masuji created the **StereoPlayer app**

Matej Bohac's Achromatic Stereoscope & XBP

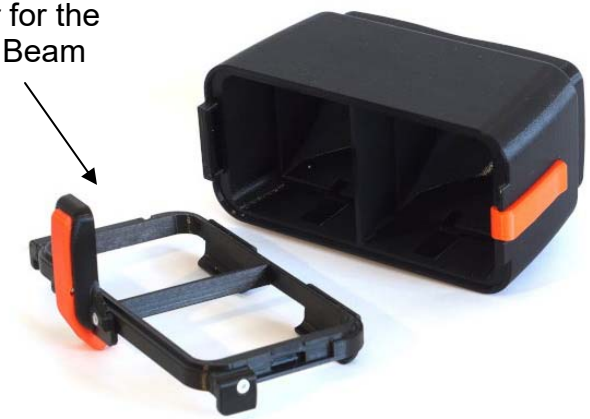
- Matej Bohac has created a series of Achromatic 3D Printed stereoscopes for digital phone screens. The original viewer was made out of wood. Responding to the interest from 3D enthusiasts, Matej designed the Classic 3DC Printed stereoscope. The latest version of his Stereoscope is a **Modular Design**, which accepts different attachments, for example for the Sony Xperia phone, Medium Format slides and the **XREAL Beam Pro.**
- The Stereoscope has **achromatic lenses** (there is a choice of FL, I use **~100 mm**, with fixed Interaxial Distance (IA) **63mm**. The design is excellent (ergonomically) and I like the long **focusing range**.
- The **best 3D viewing experience** is using the **Sony 4K Xperia** phone, which is what inspired the creation of this viewer. The XBP screen does not have as high resolution and the image needs to be reduced in size. But the Stereoscope is still **useful** to **view 3D images** taken or stored in the XBP and also as a **3D viewfinder** for the camera.

Left: The **original** wooden Stereoscope viewer by Matej Boac

Bottom: The **Classic** 3D-Printed Stereoscope viewer. The Sony Xperia 4K pone attaches directly to the viewer and it is held in place by a spring-loaded clip. An attachment is available to view Medium Format slides.

Right: The **Modular Stereoscope** viewer with the XREAL Beam Pro attachment. A variety of attachment are available for this viewer.

Adapter for the
XREAL Beam



The Dichopter

- The Dichopter is a **popular & inexpensive** 3D viewer that can attach to any phone, including the XREAL Beam Pro.
- The viewer folds flat, and has a clip that attaches to the phone.
- Specifications: **FL = 100 mm**, **IA = 65 mm**
- For the XBP it can be used as a **viewer** if the image is reduced in size but also as a **3D viewfinder.**
- It can also be used as a viewer with different phones. The image size might not need to be reduced if the phone as a smaller screen (this is the case for my iPhone 13)

Viewing Lens Focal Length & Magnification

- **Focal length** (FL) and **Magnification** (M) are related: Shorter FL = Higher M
- The formula usually used is: **M = FL / 250mm**.

  This assumes that one can focus at an object at 250mm distance without a lens (M = 1). A lens will allow you to focus closer, which increases the magnification. This is just a convention, I cannot focus at an object at 250mm without reading glasses (a lens).

- **The Focal Length of a viewing lens is approximately equal to the distance of the lens from the image when the image is in focus**.
  A good choice of FL for viewing a phone screen is ~100 mm or larger (maybe up to 150 mm). Anything shorter than 100 mm will show the pixels and lead to an inferior viewing experience. For medium format slides a shorter FL of 80mm (or sometimes shorter) is used.

- A simple way to increase the magnification of a viewer is to use it with **reading glasses**.
- Reading glasses and close-up lenses are usually rated in **diopters** (D = 1000mm/FL). When combining two lenses, the **diopters add up**.
  That's because the combined focal length (F) of two lenses (F1, F2) is $1/F = 1/F_1 + 1/F_2$.
  Multiplying each term by 1000mm we get D = D1 + D2.
- A 100 mm FL lens has D = 1000/100= +10. Combined with +2.5 reading glasses (I use these to read my phone) we get: D = 12.5, which results in a Focal length of 1000mm/12.5 = **80 mm**, hence the magnification increases.
- One advantage of Matej's stereoscope is that the **long focusing range** makes it possible to focus the image when using reading glasses.

Reducing Image Size

3DSteroid App

- Navigate the folders, open an image and Select “**Stereo**” [1]
- In the next screen [2] select **“SBS Frame**” and check “**OK**”
- Using your fingers reduce the image size to **about 80%** [3]
- Tap the screen to remove the information. You are all set. To advance to the next image you can sweep the screen or use the volume button. The size and configuration of the images does not change as you move from one image, and even if you exit the app and open it again later.

1

2

3

Why 80%? The infinity spacing of 75mm must be reduced to match the 63mm lens spacing, by 63/75 = 84%, This assumes that the stereo window is at infinity (true for as-recorded XBP images). If there a stereo window, then a bit more reduction is needed to account for it. 80% is a good choice.

StereoPlayer

StereoPlayer 3D Viewer

For 3D Still Pictures and 3D Video

Taping the screen removes the information and only leaves the image

- There is a **scale to adjust the stereo window** (try a setting between 120 and 130). The setting stays the same from one picture to another and even from picture to video. This is a useful function for XREAL Beam Pro images that do not have a stereo window. You can play as-recorded videos directly on a 3D TV with correct window and perfect alignment.
- The images can be **resized** just like 3DSteroid (click at STEREO, etc.)
- Unfortunately, **the volume button does not advance images**, it changes the volume for the video. The only way to advance images is to swipe the screen or touch the arrow buttons.

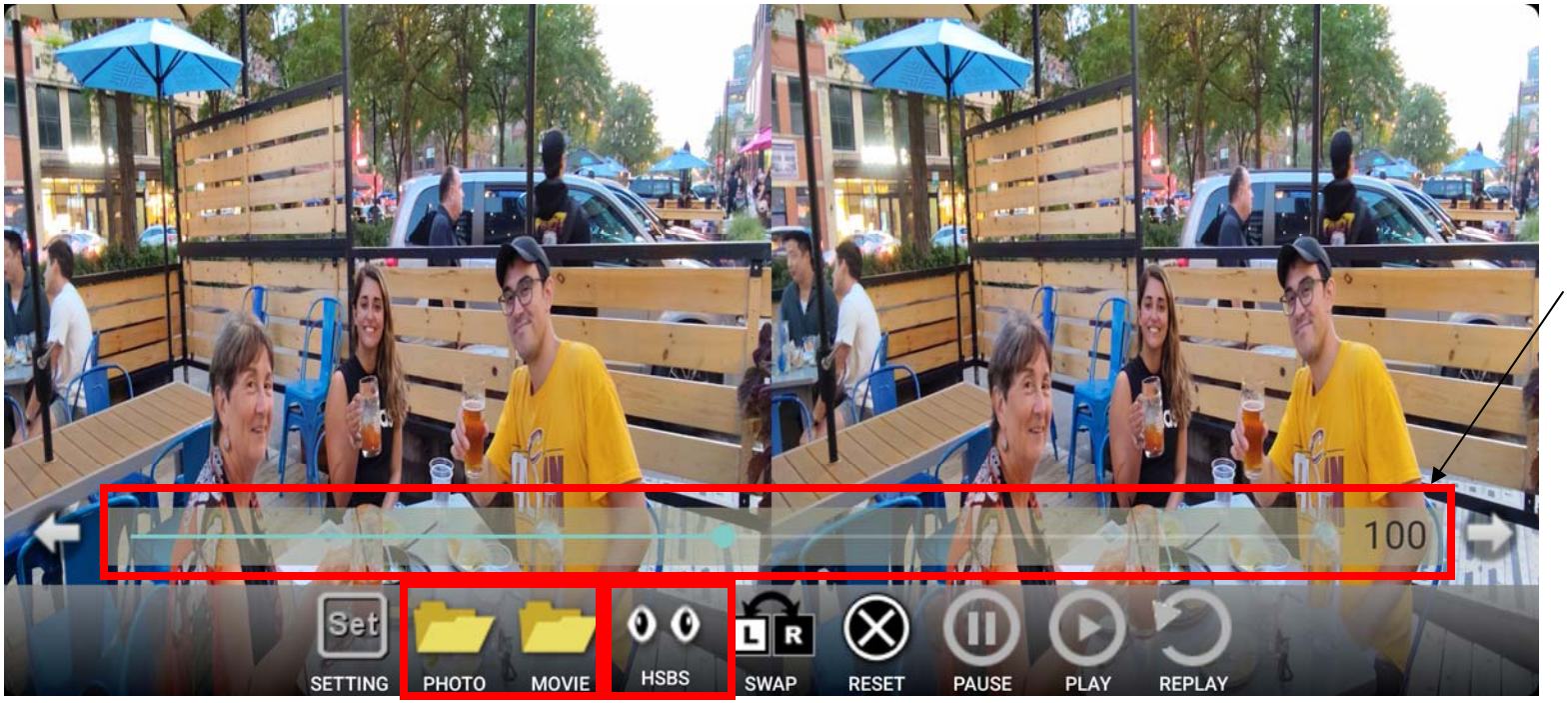
Half Width SBS for GOOVIS 3D viewers and 3D TVs

3DSteroid

3DSteroidPro

From the first screen, select "Stereo" and then this setting and OK.

StereoPlayer



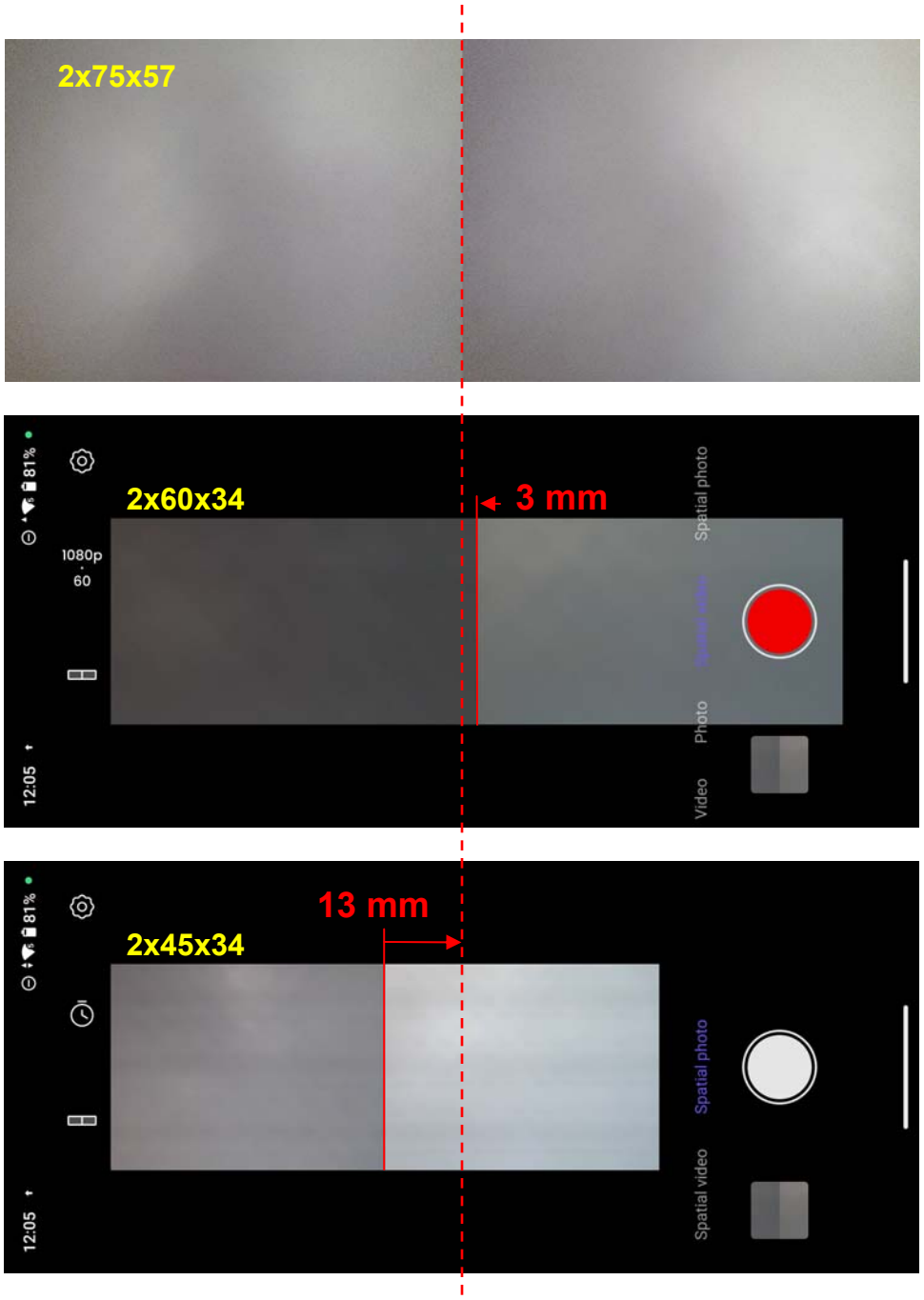
StereoPlayer

Adjusts the Stereo Window (try a setting between 110 and 120)

With this app you can connect the XBP directly to a TV or a Goovis 3D viewer and play "as recorded" videos with perfect alignment, including the stereo window!

Select 3D Photo or 3D Video, then select HSBS

Viewing in 3D while Recording in 3D - Part 1



Measurements of the 3D Viewing screen, the Spatial (3D) Video recording screen and the Spatial (3D) Photo Screen. The Stereoscope is designed to hold the XBP centered for viewing 3D. The XBP will need to be shifted to center the images when shooting 3D, as shown above. This is not necessary but makes the composition more accurate.

At the 25th ISU Congress in Wageningen, in 2025, **Per Fuglesang**, a 3D enthusiast from Norway, asked if we could use Matej's Stereoscope to view the screen and compose in 3D. At first, I thought that this would not work, but it turns out that it does work. Not perfectly, because the 3D screens in Video and Photo modes are not centered properly (see left). Plus, the 3D Photo screen is rather small. It is not perfect, but it still works.

After this discovery I started using the XBP attached to the stereoscope and viewing the screen while taking pictures and discovered a number of advantages:

- As expected, the **external light is blocked** so one can see the screen well, even under direct sunlight.
- **Composing in 3D** can make a big difference. I can see the effects of tilting the phone up/down (converging verticals) and hold it perpendicular so that parallel vertical lines remain parallel. I can also see depth and adjust it by moving back and forth.
- I found myself taking pictures at **unusual angles** and **subject distances** (compositions that I would not normally use) just because I liked what I saw through the stereoscope. When reviewing these pictures, I still like them because it is exactly what I saw and liked in the first place.
- Other advantages include not needing to use reading glasses to see the screen (just focus the viewer) and holding the camera steadier due to the extra weight and better balancing of the viewer.
- I fire the shutter by using the "red button" with my left hand. I press the button and then release it carefully (the picture is taken when the button is released). I can also use a BT remote to take pictures.
- **Shooting 3D video works especially well**. I pay attention to the composition and stabilization and I am able to pan smoothly. The 3D video recording experience is similar to the DEV 3/5 & 50 Sony binocular 3D video units. Being able to see the recording in 3D results in better video.

There are of course drawbacks: 1) The unit is large and awkward-looking. 2) There is no built-in stereo window. 3) To switch from 3D photos to 3D video one must remove the XBP to touch the screen. 4) There is no easy way to preview the picture taken (one must remove the XBP from the holder to touch the preview button or to use a different app to view the images with the stereoscope). Despite the drawbacks, I am very excited about this possibility. It is not something to use all the time, but it can be useful in many occasions.

Viewing in 3D while Recording in 3D - Part 2

XBP is shifted by 13mm in these pictures, to center the 3D Photo.

I have been using Matej's Stereoscope (left) and the Dichopter viewer (right) to take 3D pictures & video while composing in 3D. I have made a few modifications (see below).

Being able to compose the image in 3D has changed the way that I use this camera

- Instead of being in a hurry to snap a couple of pictures and move on, I take my time studying the image. Does it have good depth? Is it composed well? Do people have good faces? Should I get closer? Move back? Tilt up/down? Is it aligned? Most important: **Do I like what I see?**

- Only if I am satisfied, I take a picture. The result is that I shoot less and keep more. **If I liked what I saw when composing the picture, there is usually no reason not to like the final result.**

Modifications that I made to Matej's XBP attachment (for the Modular Stereoscope):

1. **Removed the two side "stops"** that hold the XBP centered in place, so I can slide it to center the screen.
2. Put a piece of **friction pad** under the red clip, to prevent the XPB from sliding around.

Other: 3) Added a **bubble level** for when I use the camera without looking through the Stereoscope. 4) Added a **modified lens cover** to prevent my fingers from touching the lenses. 5) Added **labels** with my contact information on both viewer and the XBP (I do this for all my equipment). Matej is planning to redesign the XBP attachment to allow for the sliding of the XBP to center the view-finder image.

The Positives

- **Compact** & **easy to carry**
- Very **easy to use**
- Can use standard **phone accessories**
- **Unique** combination of **base & FOV**
- Very **responsive** & **large** touch **screen**
- Good **battery life**
- **Water** & **shock** resistant
- Good **stabilization**
- **Good low light performance**
- Does not attract **attention**
- Can be used by **anyone**
- **Fixed focus** in 3D
- **Simple file formats** & file naming
- **Perfect alignment**
- **Simple post processing**
- Can use many **apps**
- Many **viewing options**
- Possibility of a **3D Viewfinder**
- **3D Media player**
- **Two USB-C ports**
- **Good 3D video** for the casual user

XBP's Strengths

- **3D Documentation**
- **Spontaneous photography**
- **Creative compositions**

Concerns / Wishes

- **Image Quality?**
- **Fully Automatic Exposures**
  (no Manual / Control of shutter speed**)**
- **Short base & wide FOV**?

My Goal

- **Take advantage** of the XREAL Beam Pro's unique characteristics
- Produce pictures that **look normal**
- Take **interesting** / **creative pictures** or pictures that **no other camera can take**

XREAL Beam Pro as a 3D Camera

Because of the

1) **Ultra-wide field of view** and
2) **Reduced lens spacing**

XBP pictures have a certain "**Character**" (not desirable, most times)

- Converging vertical lines
- Reduced depth

The Challenges for me are:

1) Eliminate these issues (take pictures that look "normal")
2) Take advantage of the camera's characteristics and use them to my advantage

Tips for Using the XREAL Beam Pro

BEFORE

- Find a good way to carry it
- Practice accessing the camera quickly
- Charge battery & carry external battery
- Carry any accessories you might need

DURING

- Think before you shoot
- Try to hold the camera vertically & horizontally aligned
- Come close to your near subject (2.5 ft / 0.5 m or closer)
- Compose with near & mid-range depth
- Keep an open eye for unusual compositions
- Fire the camera carefully under low light
- Adjust the exposure (if needed)
- Take lots of pictures

AFTER

- Study the picture on the screen
- Do on-camera editing (optional)
- Crop & fix window
- Further photo editing

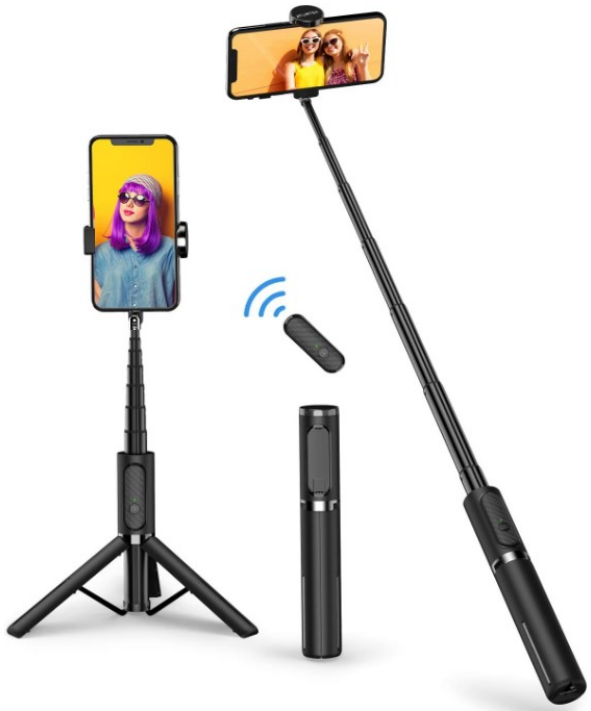
Before Tips

- **Find a good way to carry it and always have it with you!**
- **Practice accessing the camera quickly**
- **Charge battery**
  & carry external battery
- **Carry any accessories you might need**

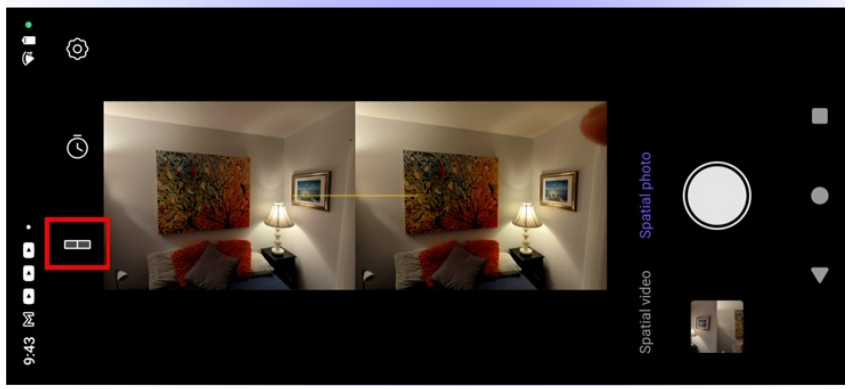
Oktay Akdeniz & stealthy XBP for street photography

My most Useful Accessory:
Selfie Stick Tripod
Has 4 functions:

- Handle
- Selfie-stick (8”-31”)
- Tabletop tripod
- Remote firing of camera



During Tips

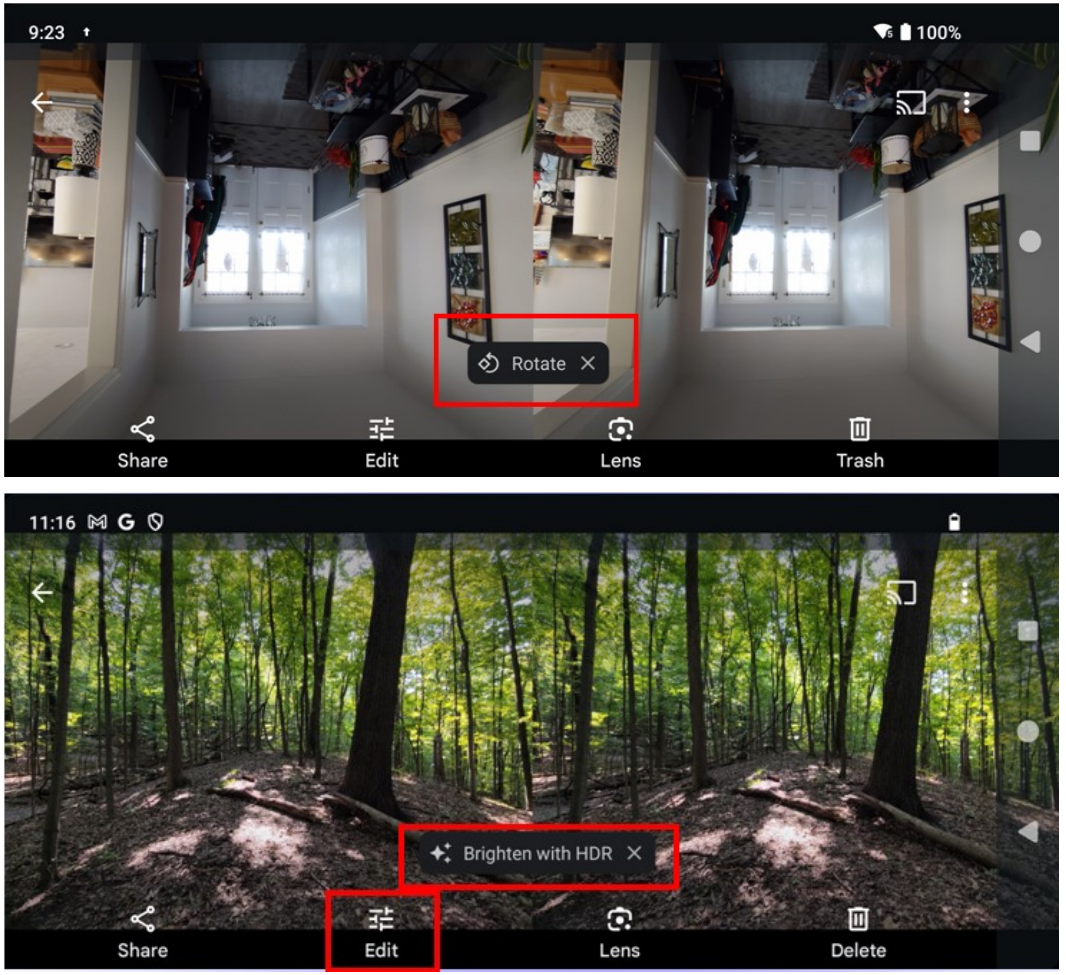


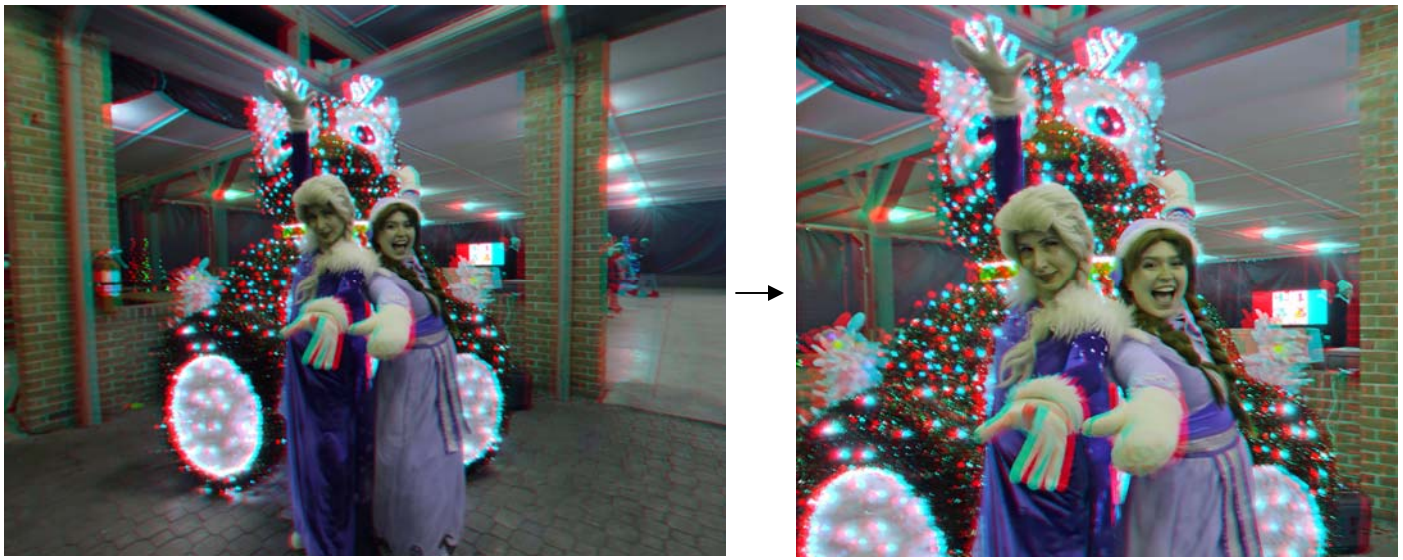
- **Think before you shoot**
  Study the screen (3D viewing helps!)
- **Try to hold the camera vertically & horizontally aligned**
- **Come close to your near subject**
  (0.6m / 2.5 ft or closer)
- **Compose with near & mid-range depth**
- **Keep an open eye for unusual compositions** →

- **Fire the camera carefully (especially under low light)** →
  - Instruct people to stay still
  - Take a deep breath
  - Lightly touch the on-screen shutter button
  - Or fire the shutter remotely
- **Utilize exposure compensation**
  (if needed)
- **Take lots of pictures**

After Tips

- **Study the picture on the screen**
- **Do on-camera editing** (optional)
- **Crop & adjust window**
- **Further photo editing**



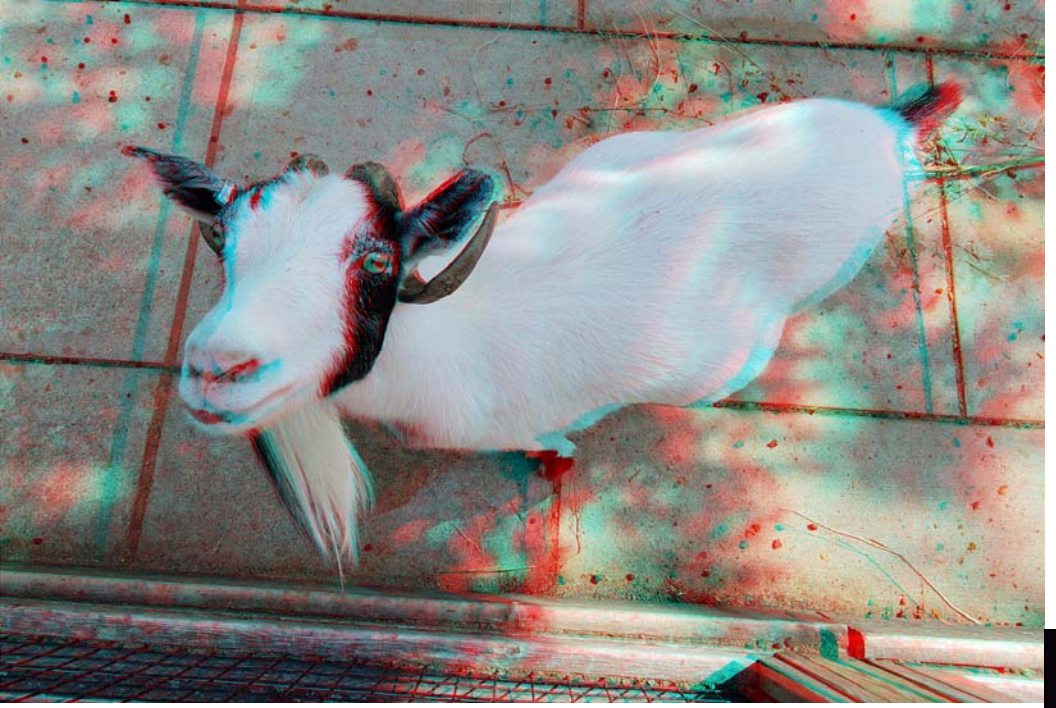


Further Photo Editing:

- **Adjust exposure & color saturation**
- **De-noise**
- **Sharpen**

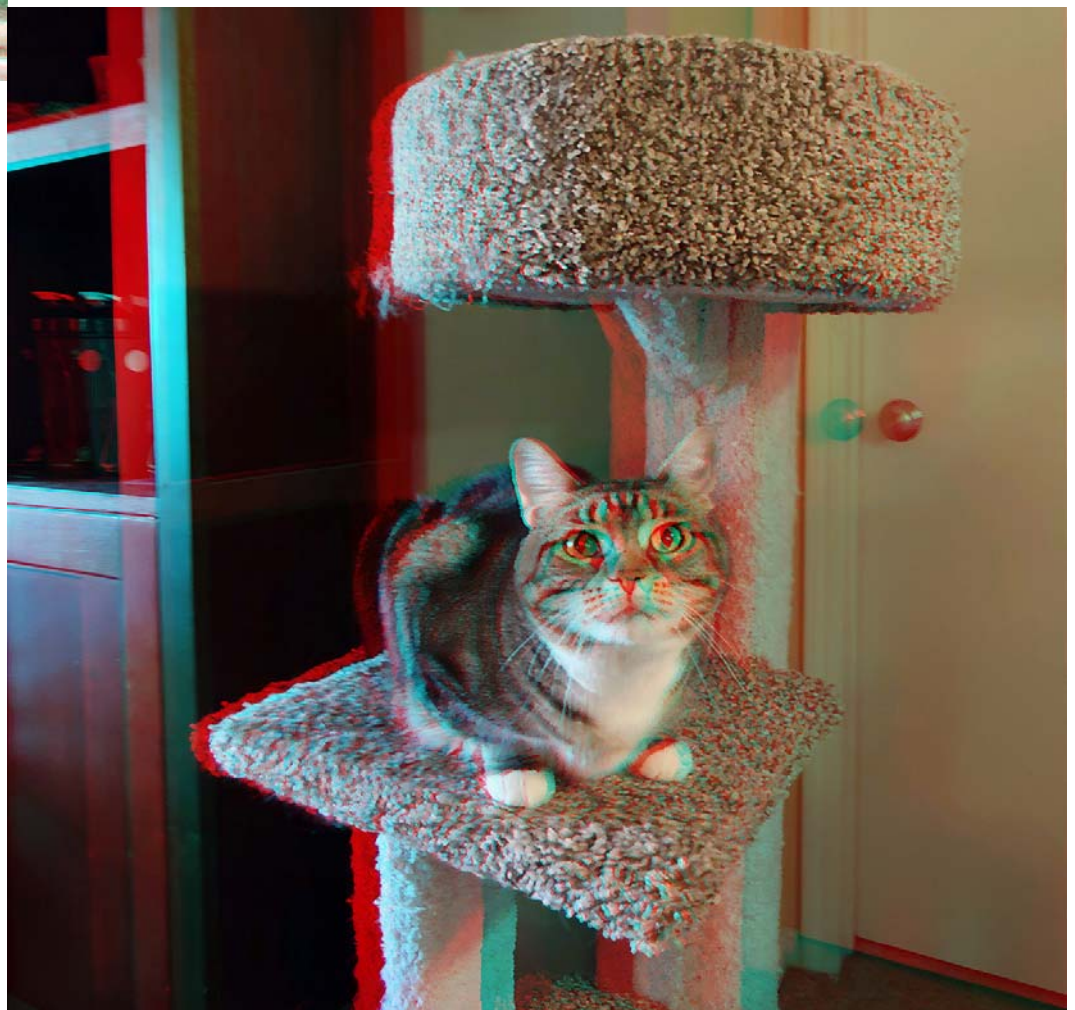
Examples of XBP Pictures

- **3D Close-ups**
- **3D Pictures that look “normal”**
- **3D in confined spaces**
- **3D Selfies - People - Portraits**
- **Creative 3D pictures**
- **Night Photography**
- **Street Photography**
- **3D and Running**
- **3D Precious Memories & Fun Pictures**
- **Extracting 3D still pictures from 3D Video**

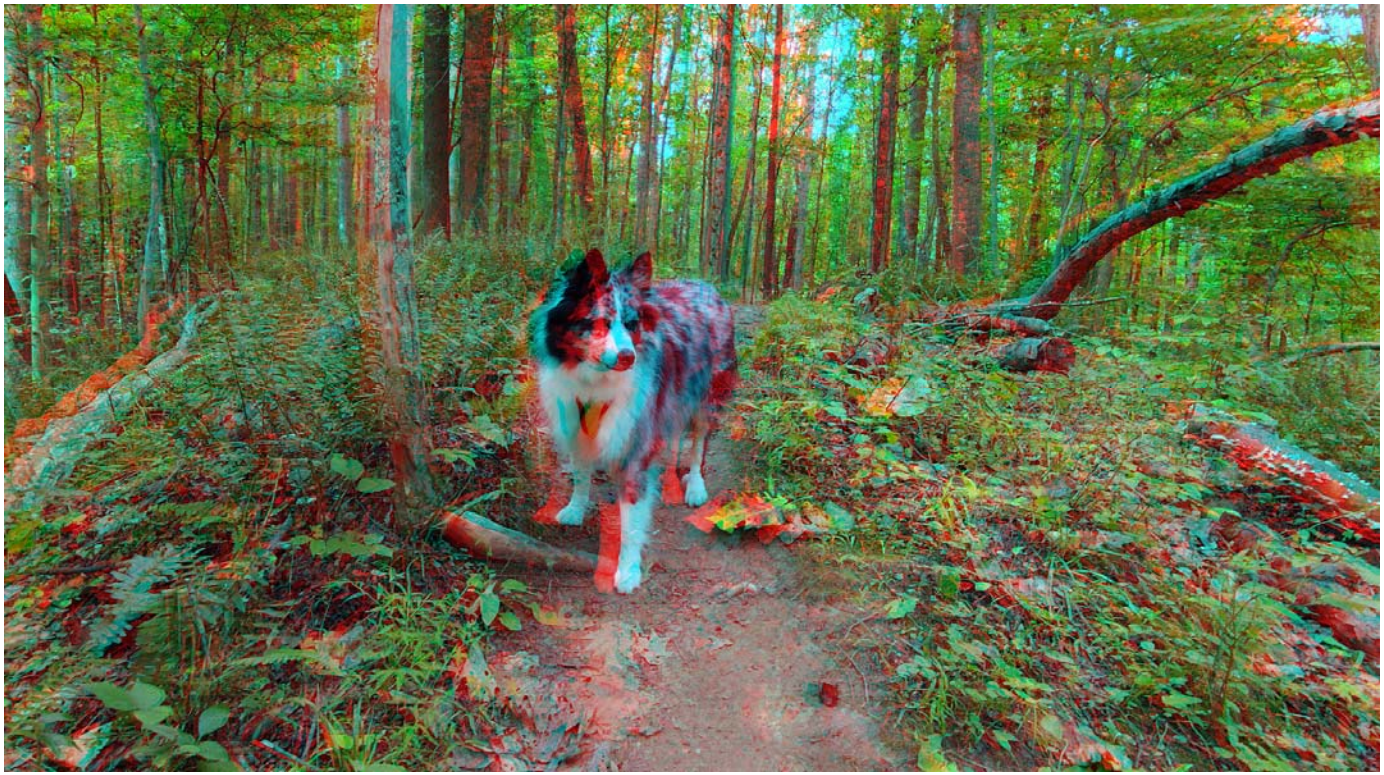


If you think you are close

… get closer !!!



2nd place Award NSA 3D-Con On-Site



Pictures that look “Normal”

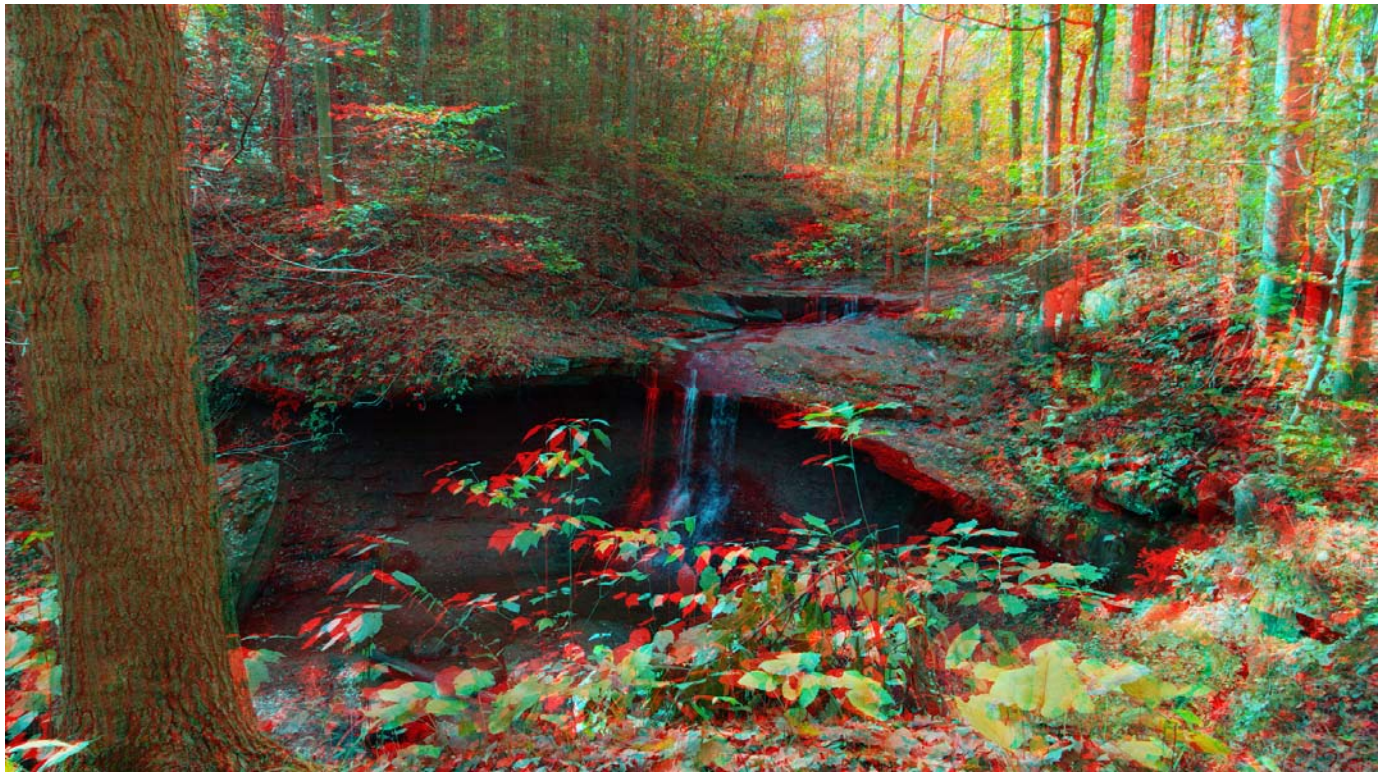
One cannot really tell which 3D camera took these.

The XBP is not a great choice for landscape / nature photography but it is the best camera if that’s all I have with me when I go hiking / running in trails.

Overcast (cloudy) light conditions are better than sunny conditions. That’s because the camera does not handle high contrast well.

The statements here are true for all cameras with small sensors.

For best Nature / Landscape photography I use my full frame Sony cameras.



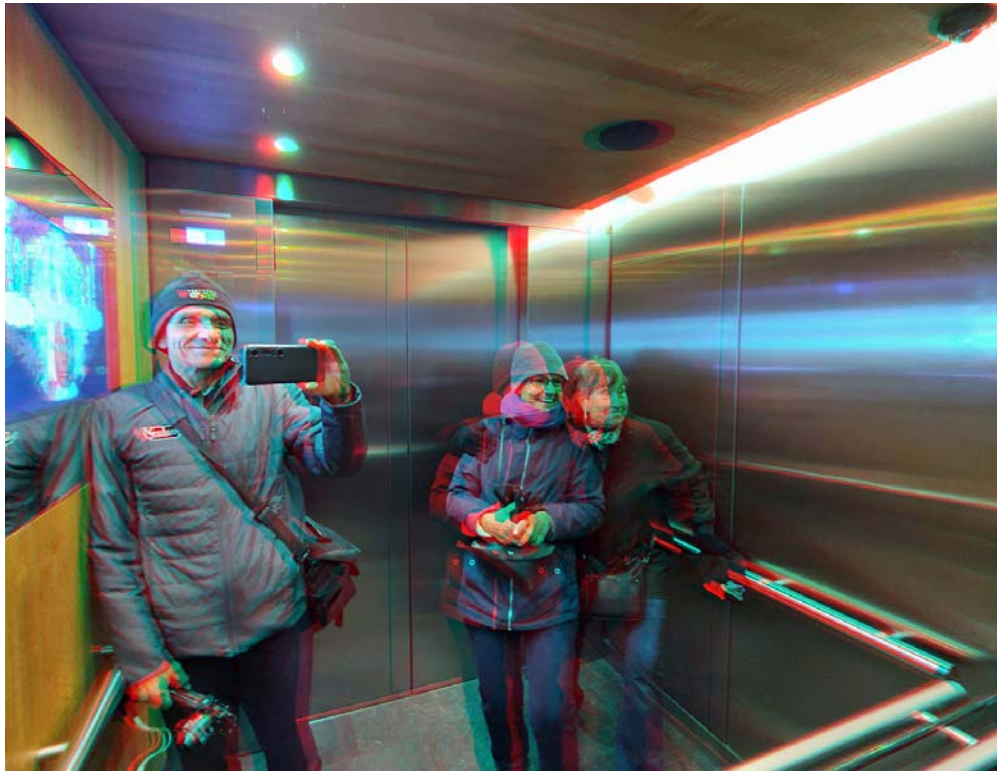
During a morning run in Arizona, I took this. I carefully composed this picture by putting the camera near the ground. I came very close to the near object. I made sure that the camera was not aligned verticall. I like the early light, plus the different depth levels here: Foreground, middle ground (tree) and background (distant mountains)

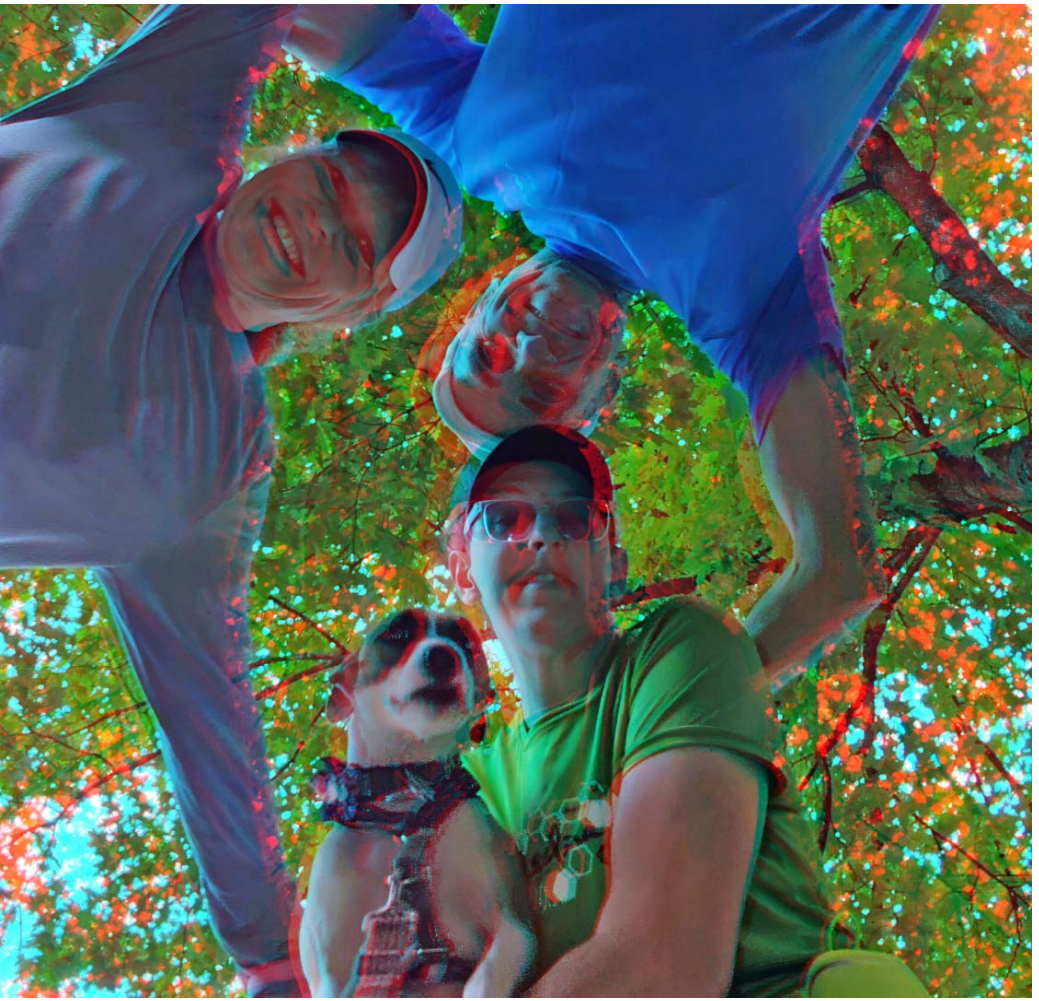
Surprisingly, the ultra-wide lens can take decent portraits

With slight cropping

Taking 3D pictures in confined (narrow) spaces is one of the best uses of the XBP

Depth looks natural





Creative 3D pictures

Look for unusual angles of view. Do not hesitate to put the camera on the ground and look up, or look directly down.

Street 3D Photography

Look for fun & spontaneous 3D pictures all around us

Street Photography with the XREAL Beam Pro

Oktay Akdeniz (Turkey)

Since my childhood, I've been very passionate about photography. However, I really started taking photography seriously during the late 60's, when I could finally afford to buy an old but unused Leica IIIf.

I was mostly shooting B&W film; developing and printing my pictures in a darkroom. At the same time, I started gathering information on photography. In order to train my eye, I acquired all the "Photography Annual" magazines, starting with the 1955 edition, which were a showcase of the best pictures of the year, selected by a group of prominent photographers. I've noticed that most of the photographs in those "Photography Annual" magazines had a certain hallmark characteristic that caught my attention. I felt that the distinguishing essence of those photographs was not simply based on the depiction of a certain object, but rather the capture of emotions and moments that were telling stories, meanwhile following widely accepted aesthetic principles.

That is when I first came across the term *Candid Photography*. The term *Street Photography*, a sub-genre of candid photography, was not that popular at the time. So, whenever I found opportunities, I took to the streets to take candid photographs; sometimes with friends who shared the same passion.

Although not absolutely necessary, most of street photography's objects are human beings. It's the capturing of their emotions, gestures, the look in their eyes that expose their mood, all in a natural way.

Any posed photograph cannot qualify as candid; although also natural. An old lady reading a book while sitting on a bench does not qualify as candid photography as it lacks the element of a magical frozen moment or the reflection of a unique characteristic or an unexpected emotion or gesture.

Street photography is about the natural expressions of people without them being aware of the camera. The essence of street photography lies in its ability to capture life as it is. Being able to shoot from the hip is also one of the important skills of the street photographer. Camouflaging oneself from the subject leads to spontaneity and catching the decisive moment.

Here comes the issue of taking someone else's photograph without his/her consent. As far as I know regarding the right to privacy, the law is flexible depending on whose property you take the picture on, how crowded the area is, and so on. One thing that's certain is that you may not publish or share other people's photographs without their written consent.

Street photographers should respect their subject; they should avoid taking photos that may exploit, embarrass, or harm an individual. Whether legal or not, some people simply don't want their photographs taken. If they notice that you're secretly taking their photograph you may get into trouble.

3D Self Portraits

Easy to do with the BT remote

George & George

3D and Running

- Running marathons & trail races (in nature/mountains) is my “other hobby”.
- In 2009 I ran the Athens (Greece) marathon with my **Fuji W1**. The Fuji does not have image stabilization and does not have good low light performance, so it is a problem.
- The **Panasonic Lumix 3D1** is better but has short stereo base and it is prone to damage by water.
- The **Qoocam Ego** has slow response and “eats” the battery quickly.
- **XREAL BP is perfect**! Easy to carry & use when running, excellent IS, good low light performance, good stereo base.

Night (Low Light) 3D Photography

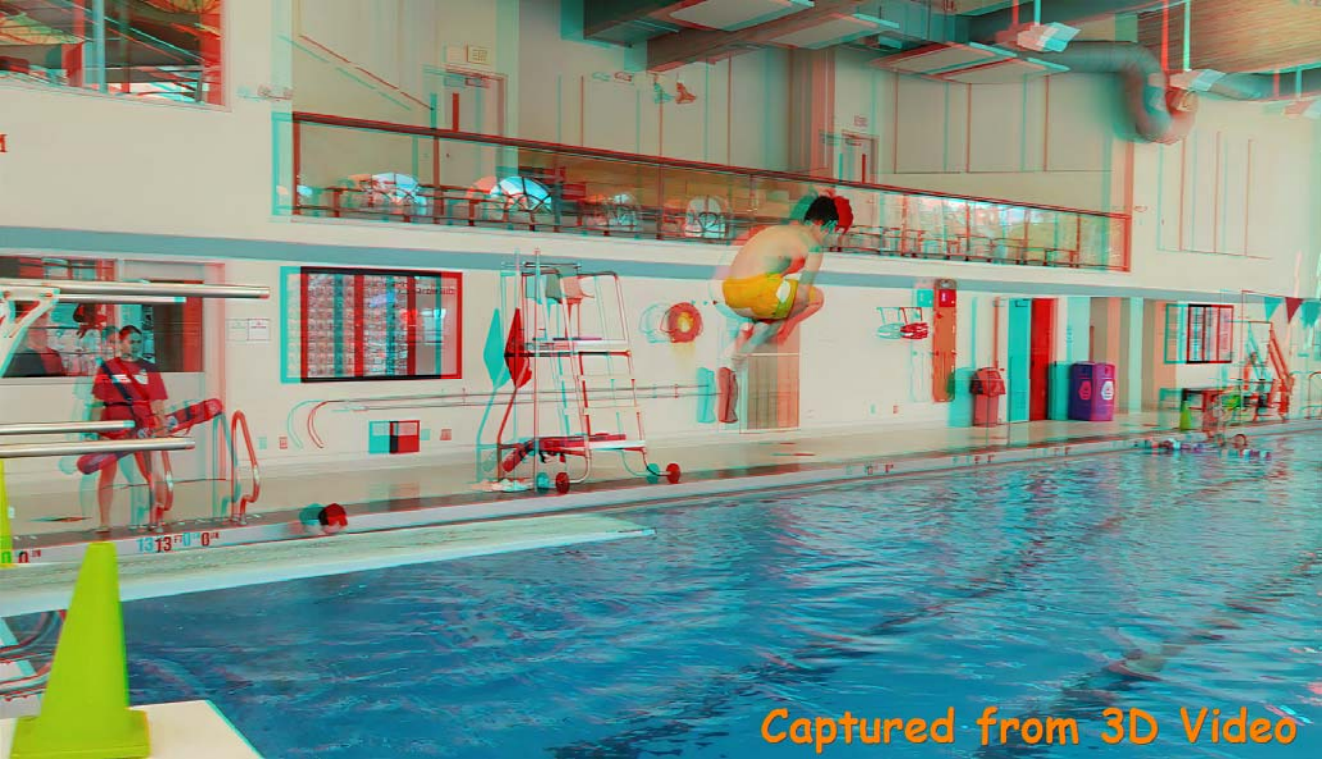
It works surprisingly well.

Be careful of the slow shutter speed (~1/10s)

Some de-noising with photo editing will help

Precious 3D Memories

Fun too!



Extracting frames from 3D Video

For capturing the peak action or best moment

An "Accidental" Success Story

3D Window

Bulletin No 301 July 2025

"Givehimthehonour" takes the fence

by Derek Medhurst

Background

I have been taking photographs at Plumpton Racecourse in Sussex (in south-east England) for about eight years, primarily in 2D flat photography which accounts for the bulk of all my pictures. I have tried occasional shots there with the Fuji W3, which has been my main stereo camera, but it's always been a difficult subject for it, especially with the shutter lag.

I got my Xreal Beam Pro in autumn 2024 and I thought it worth giving it a try at a Plumpton meeting. The wide angle view, fixed focal length and small lens separation ruled out shots from afar, so I got close to the fence, low to the ground to take a shot looking up as the horses came over.

When the horses were about 200 yards away I knelt down, set the camera to spatial photo and listened as they approached unseen. I pressed the release when I figured they were taking off. When I looked at the Xreal's screen I realised that I had accidentally set it to spatial video and had captured 1.6 seconds of video! I said "oh dear" … or something like that!

These 4 pictures (captured from the video) have already won several awards, including First Place in the PSA Stereo Sequence Competition

What is the XREAL BP for?

Not good for **good quality** landscape 3D or anything that requires **long FL**, **large stereo base**, or control of **shutter speed** (wildlife, macro, sports, fireworks, etc.)

But great for:

- **Spontaneous**, **creative** & **fun** 3D photography
- Photography in **confined areas** (inside house, restaurants, buses, trains, planes, crowed markets, etc.)
- **Travel & Street** photography with a camera that fits in your pocket
- **3D Documentation** & **memories**
- **3D Video** “the easy way”
- **Many types of 3D** using a **huge selection of “phone” accessories** (head/body straps, underwater cases, etc.)

I would like to thank **David Starkman** and **Gert-Jan Wolkers** for their help and guidance with the XREAL Beam Pro (and many other 3D related questions and issues).

Gert-Jan Wolkers is maintaining a Facebook User's Group:

https://www.facebook.com/groups/474727928845639

This picture of Gert-Jan's sister celebrating her 60th birthday was taken with the XPB and it demonstrates how the camera can capture **fun 3D memories** in a **confined space**, thanks to its unique combination of shorter-than-normal stereo base and ultra-wide field of view.