# PanoViewer User Manual

*iPhone*

Version 1.0 | Build 32
16 November 2026

## PanoViewer at a glance

Explore a geological outcrop, field site or other scene from the point where its panorama was captured. Open a full 360° × 180° panorama or an iPhone Camera panorama. Look around on the screen or place the iPhone in a compatible headset.

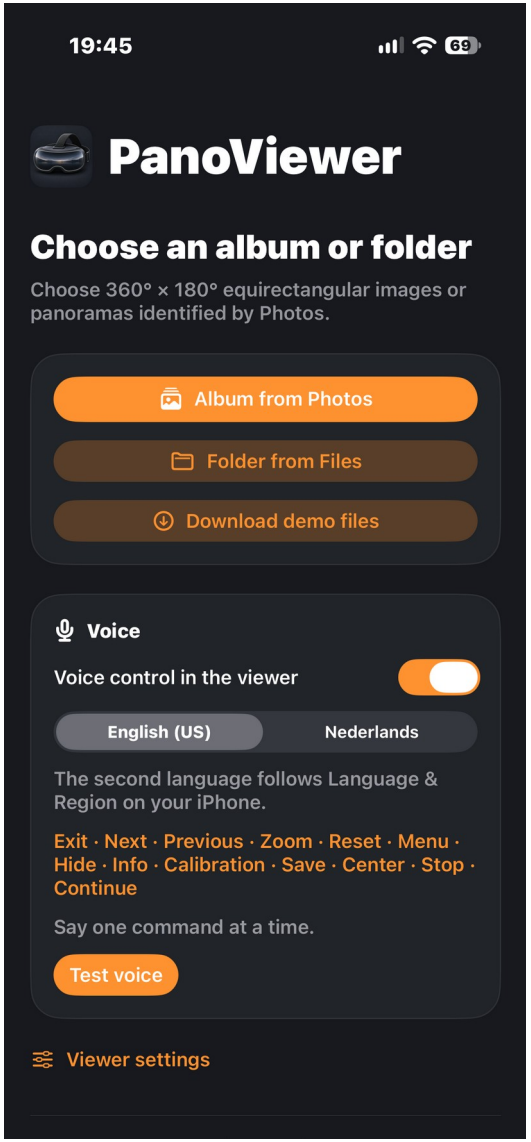
## Start here

Choose an album or folder, browse the preview and tap **Start Pano Viewer**. To try the supplied examples, tap **Download demo files** below **Folder from Files**.

## What you need

An iPhone running iOS 17 or later and a compatible panorama. A headset is optional. Internet access may be needed for the demo ZIP or items stored with a cloud provider.

Copyright © 2026 StrataKernel.nl




Start screen with English (US) selected.

# Contents and quick start


| Section | Page |
|---|---|
| Choosing a collection and downloading demos | 3 |
| Looking around and using the viewer | 4 |
| Using a headset | 5 |
| Calibrating the headset view | 6 |
| Voice commands and panorama information | 7 |
| Viewer settings and troubleshooting | 8 |
| Appendix A  Panorama formats and resolution | 9 |
| Appendix B  Creating a spherical panorama with iPhone and PTGui | 10 |
| Appendix C  How the demo spherical panoramas were made | 12 |


## Quick start

1. Tap **Album from Photos** or **Folder from Files** and choose the collection.
2. Use **Previous** and **Next** in the preview, then tap **Start Pano Viewer**.
3. Drag to look around, pinch to zoom, and tap once to show or hide controls.
4. For a headset, rotate to landscape, tap **Headset** and use the crosshair icon to open **Calibration**.
5. Say Menu to show the viewer controls. Tap the top-bar Menu button or say Exit to return to the collection.

# Choosing a collection and downloading demos

## Album from Photos

Select an album containing iPhone Camera panoramas or full 2:1 panoramas. With limited Photos access, PanoViewer lists the permitted photos. A cloud original may take time to load.

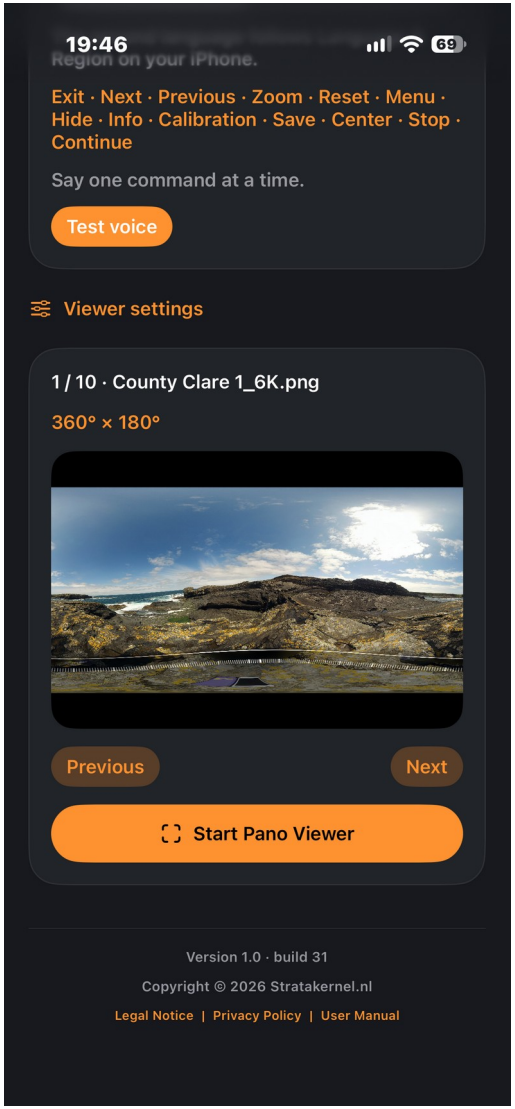
## Folder from Files

Select the folder that directly contains the panorama files. PanoViewer scans that level and skips incompatible or unreadable images. For full panoramas use 2:1 equirectangular images. See Appendix A.

## Download the demo collection

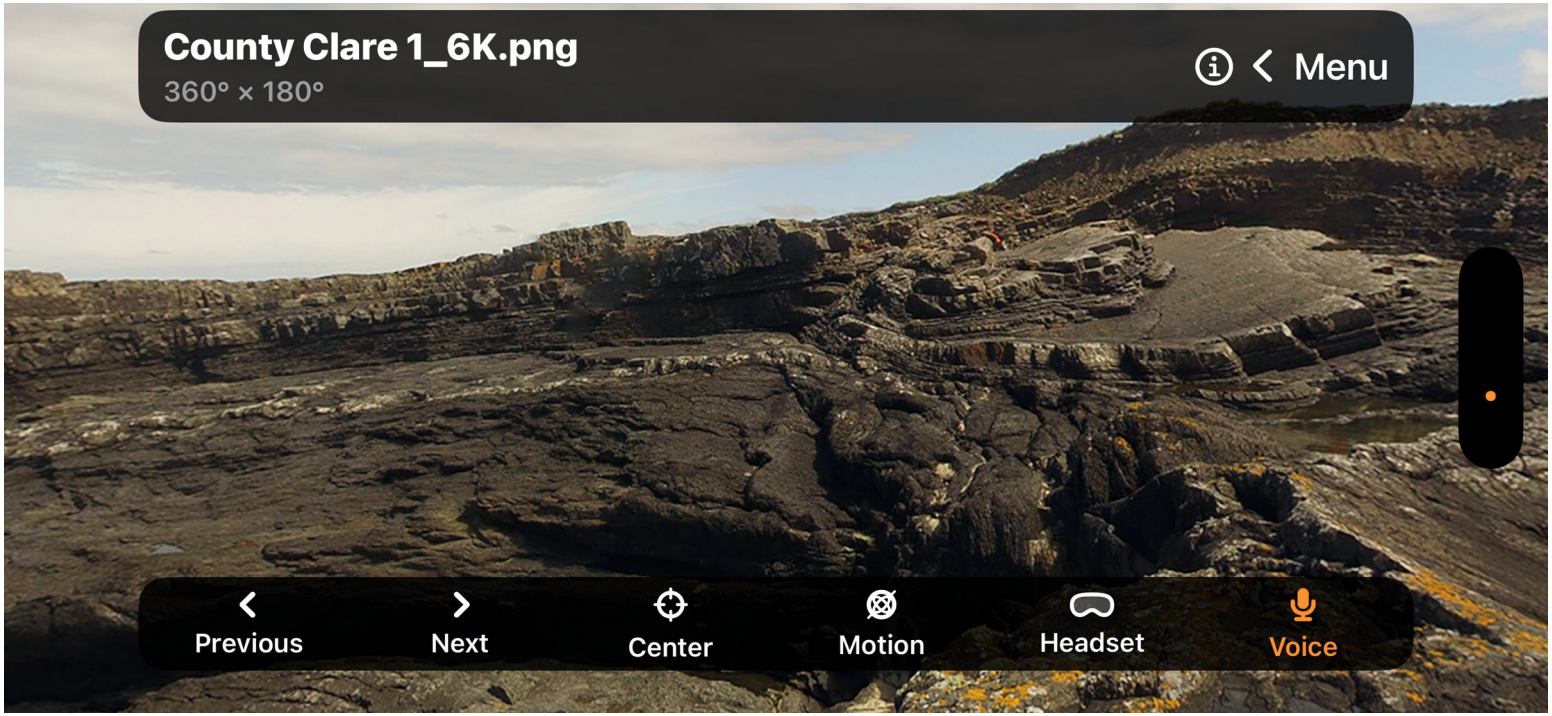
1. Tap **Download demo files** and wait for the ZIP to download.
2. Choose where to save **PanoViewer-Demo.zip** in the Files picker.
3. Open Files and tap the ZIP to extract **PanoViewer Demo**.
4. Return to PanoViewer, tap **Folder from Files** and choose the extracted folder of ten panoramas.

Use **Previous** and **Next** to check the preview. Tap **Start Pano Viewer** to open it.




Preview for the first of ten demo panoramas.

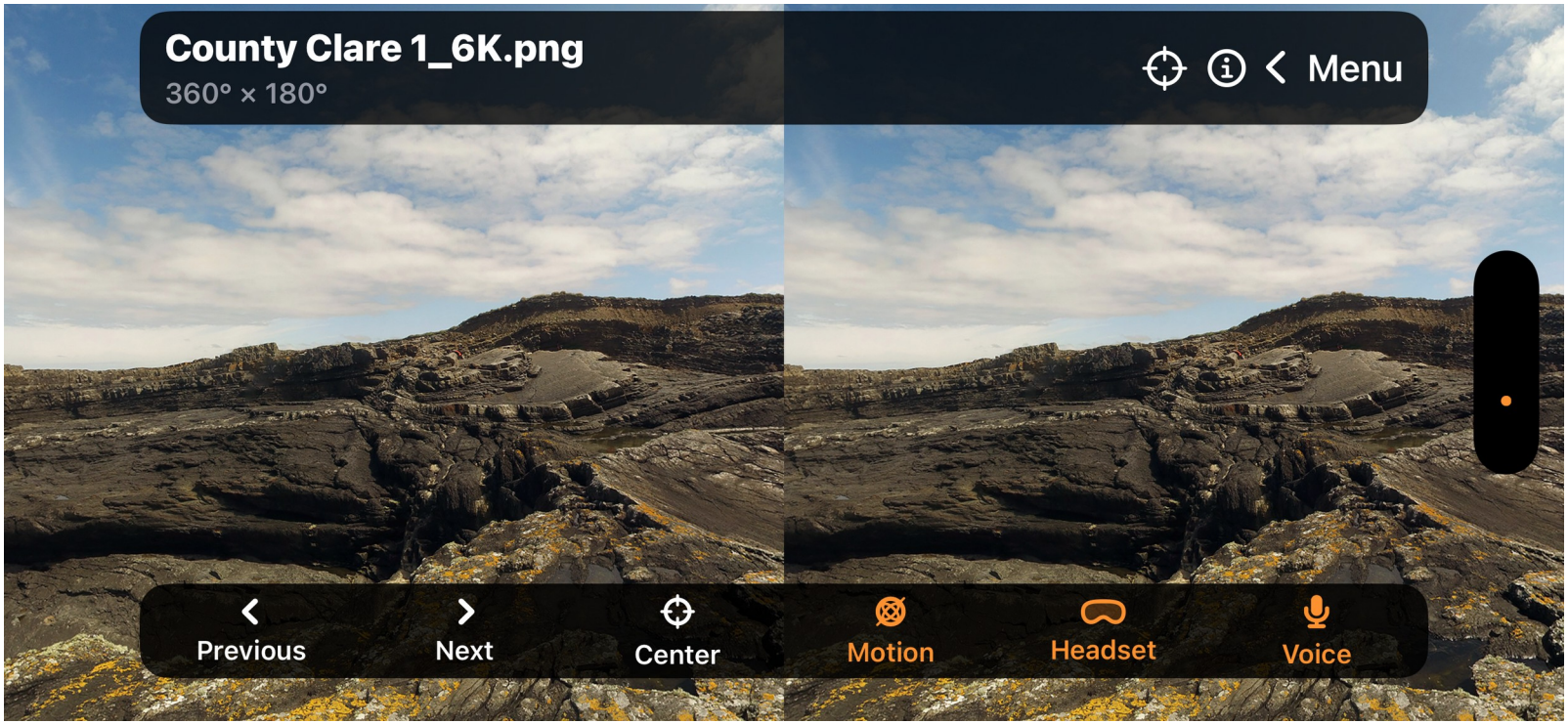
# Looking around and using the viewer




The single-screen viewer in landscape. Portrait viewing is also available.

| Control | What it does |
|---|---|
| Drag / pinch | Look around the capture point or change the zoom. |
| Center / double-tap | Recentre the viewing direction. |
| Previous and Next | Open another panorama in the selected collection. |
| Motion | Let iPhone movement steer the view. |
| Menu | Return to the collection. The current source and preview stay available during the session. |

# Using a headset



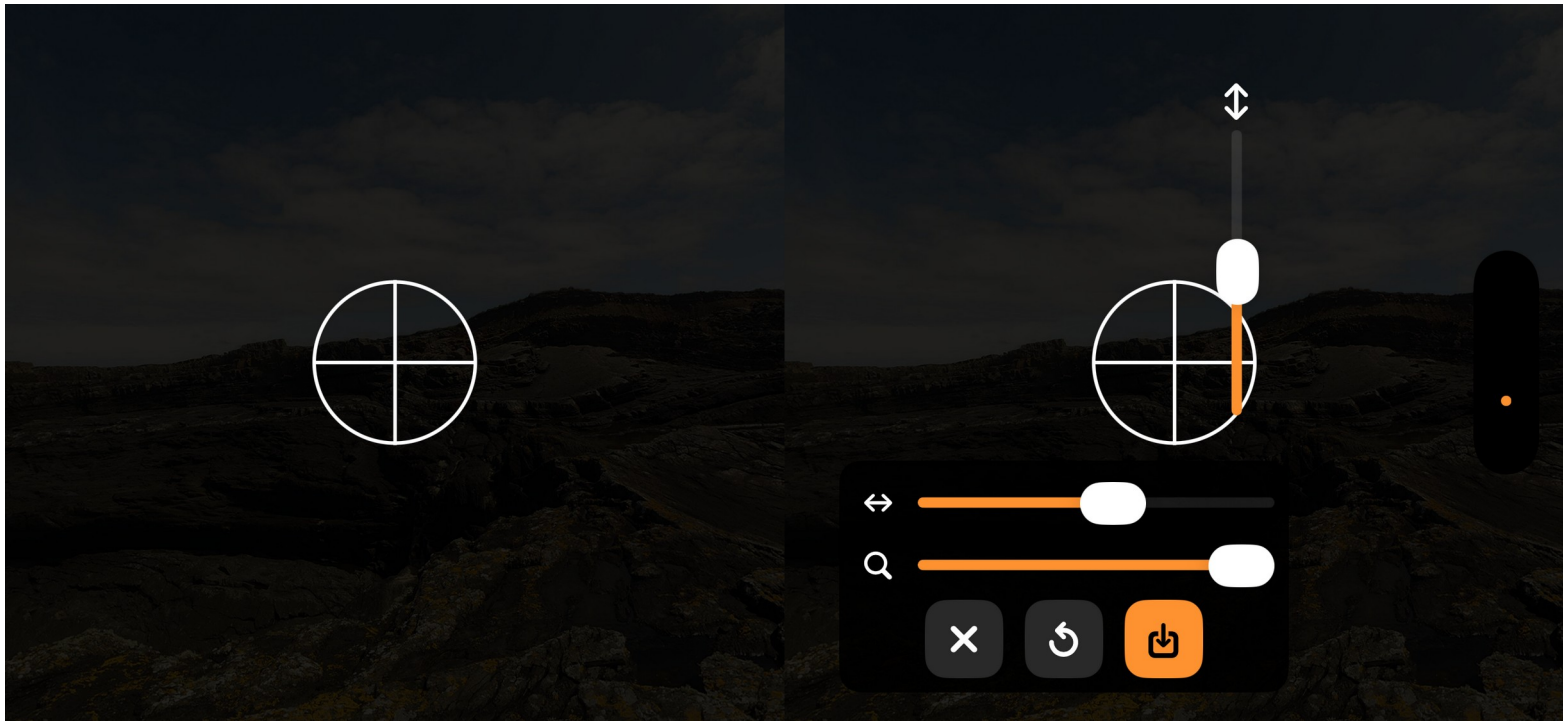

Headset mode in landscape. The Calibration crosshair sits beside Info on the top bar.

## Set up the phone

Use a seated position. Rotate the iPhone to landscape, tap **Headset** and fit the phone securely in a compatible holder with the display centred. Enabling Headset also enables Motion. Tap the image to show the controls if they are hidden.

Both eyes see the same capture point. Turning your head changes where you look within the panorama. Follow the headset maker’s fit and safety instructions, and stop if viewing feels uncomfortable.

# Calibrating the headset view



The calibration targets appear in both eyes. The adjustment controls sit in the right-eye view.

In Headset mode, open **Calibration** with the crosshair button on the top bar or say **Calibration** with Voice active.

| Control | Adjustment |
|---|---|
| Vertical arrows | Raise or lower both views. |
| Horizontal arrows | Move the views closer together or farther apart on screen. |
| Magnifier | Change the size of the headset view and targets. |
| X / circular arrow / orange Save | Cancel, reset the current adjustments, or save them for later sessions. |

Say Hide to see the targets alone. Tap a target or say Calibration to show the sliders again. Menu returns to the viewer controls. Exit returns to the panorama, and Save applies your adjustments before returning.

# Voice commands and panorama information




Info in Headset mode. This example shows a field caption from the source image.

Turn on **Voice control in the viewer** and choose the recognition language, which also selects the app interface language. The available second language follows iPhone Language & Region and Apple Speech support. Use **Test voice** to check recognition. PanoViewer requires on-device recognition.

Say one command at a time. Next and Previous browse the collection. Center brings the original image centre straight ahead at your current zoom. Zoom moves in, and Reset restores the normal zoom and centre. Menu shows the viewer controls. Hide clears them. Exit returns to the collection.

Tap Info or say Info to see the filename, source dimensions and available date, caption, place and coordinates. The orange bar fills over three seconds. Say Stop to hold the card or Continue to resume the countdown. Say Info again to restart it.

# Viewer settings and troubleshooting

### Estimated capture angle

This changes how wide an iPhone Camera panorama appears in the viewer. If you swept the camera about a quarter turn, try 90°. The default is 120°, adjustable from 30° to 240°. For full 360° panoramas, no adjustment is needed.

### Headset optics

The slider changes radial warping near the edges to compensate for headset lenses. Start with the default. Use on-screen **Calibration** for image height, eye spacing and zoom. **Reset lens settings** restores lens correction and clears saved alignment.

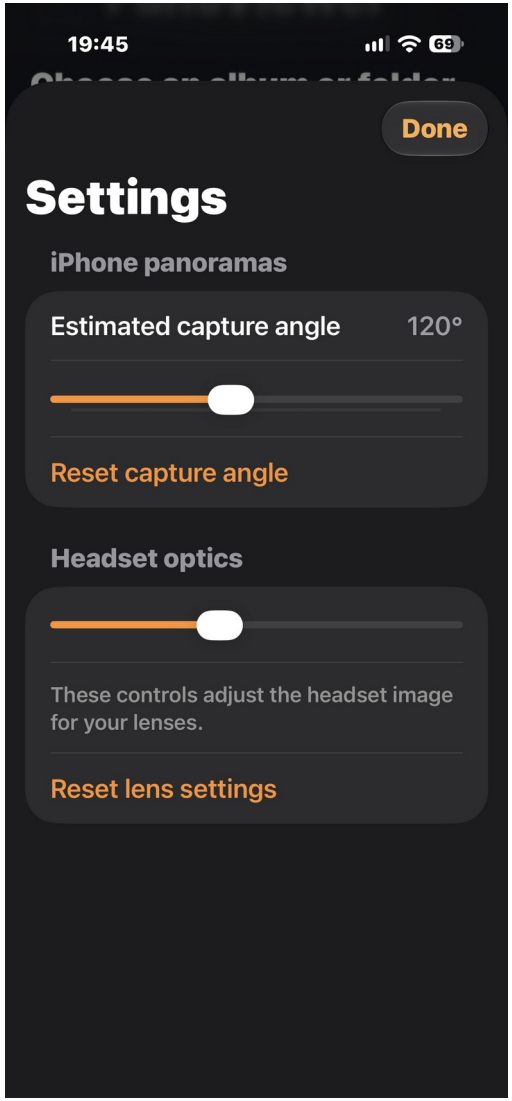
### If something does not load

Check that the folder directly contains readable 2:1 images, or select the iPhone panorama from its Photos album. Wait for cloud files to finish downloading. If demo downloading fails, check your internet connection and available storage.

### If voice is unavailable

Check Microphone and Speech Recognition permissions in iPhone Settings. Try English (US) if your selected language has no on-device recogniser. Touch controls remain available.

For support, email support@stratakernel.nl and include the app version, build and iOS version.




Viewer Settings

# Appendix A  Panorama formats and resolution

A full equirectangular panorama stores 360° around the capture point and 180° from straight up to straight down. The axes use the same pixel scale per degree, giving a **2:1** image. The left and right edges meet when the viewer wraps the image around you.

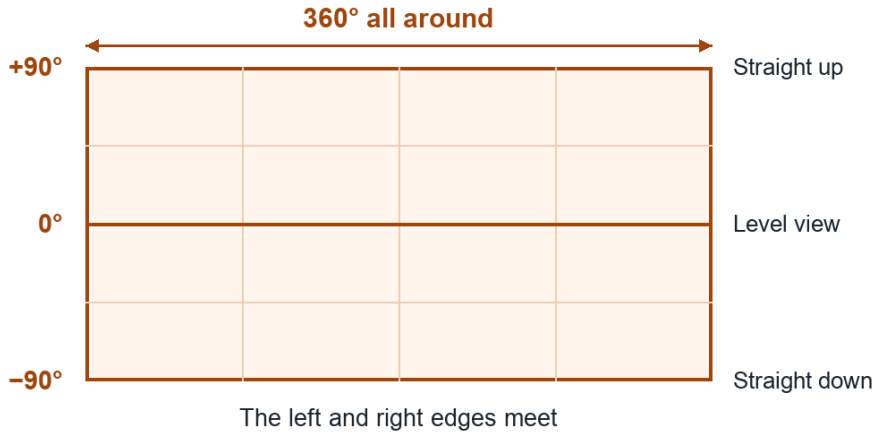



Figure A1  Viewing directions in a full equirectangular panorama.

## Resolution and export

PanoViewer displays up to **6,144 pixels on the longest side**. For a full 2:1 panorama, that is **6,144 × 3,072 pixels**, or about 18.9 megapixels. Larger images scale down for viewing and may take longer to load. Available memory and file format affect whether very large files open.

Export as a full 360° × 180° equirectangular image. Cropping another photograph to 2:1 gives the required proportions but does not make its projection spherical.

Google projection reference

## Panoramas from the iPhone camera

Switch the **Camera** app to **Pano**, tap the shutter and sweep slowly along the arrow. Tap the shutter again to finish. Open the result using **Album from Photos** so the app can recognise it as an iPhone panorama.

A quarter turn captures about 90°. Set the estimated angle to 90° to display the photo across that span. The viewer shows black beyond the photographed area. The same 6,144-pixel display limit applies.

Apple iPhone Camera guide

| Source image (px) | Displayed image (px) |
|---|---|
| 4,096 × 2,048 | 4,096 × 2,048 |
| 6,144 × 3,072 | 6,144 × 3,072 |
| 8,192 × 4,096 | 6,144 × 3,072 |

# Appendix B  Creating a spherical panorama with iPhone and PTGui

A spherical panorama covers 360° around the camera and 180° from straight down to straight up. PTGui is desktop photo-stitching software. It matches features in overlapping photos, aligns the images, and blends them into a single panorama. Use the iPhone Camera app in Photo mode to capture the individual frames. Apple's Pano mode captures a single sweep and works for partial panoramas.

The cameras and software in Appendices B and C are examples. You can use other cameras, capture apps or stitching tools that produce a 360° × 180° equirectangular image with a 2:1 aspect ratio. Product names identify the equipment and software used or illustrated. StrataKernel is independent of their makers.

## Capture the source photos

**1. Choose one viewpoint.** Find a spot with a clear view of the outcrop and its surroundings. A phone clamp and a multi-row panoramic head help you rotate and tilt around the active lens's no-parallax point. If shooting handheld, keep the active lens as close as possible to the same point in space. Rotate the phone in place. This matters most where nearby ledges or rocks overlap distant features.

**2. Keep the camera setup consistent.** Use the same lens, zoom and phone orientation throughout. Lock focus and exposure when practical to reduce frame-to-frame differences. Keep sharp, stationary features in the shared parts of adjacent frames. Moving people, vehicles and waves can leave ghosts at seams.

**3. Shoot overlapping rows.** Make a complete ring around the horizon, including overlap between the last and first frames. Tilt the phone up and make another ring. Repeat below the horizon. Aim for roughly one-third overlap or more between neighbouring photos, both around each ring and between rows. Add rows or frames as needed for your lens. There is no fixed shot count.

**4. Photograph both poles.** Take a frame pointing straight up (the zenith) and one straight down (the nadir), with overlap into the nearest rows. Check that the outcrop, sky and ground are all covered before leaving the site. Transfer the original photos to your computer with their lens metadata intact.

# Stitch and export in PTGui

**5. Load and align.** In the Project Assistant, use Load Images to add the source photos, including the zenith and nadir. Select Align Images. PTGui looks for corresponding features called control points and uses them to calculate the alignment.

**6. Set the spherical projection.** In Panorama Editor, select the Spherical preset under Projection. Check that the output is equirectangular with a field of view of 360° horizontally and 180° vertically. Level the horizon and position the main outcrop near the centre if you want it straight ahead when the panorama opens.

**7. Check the stitch.** Inspect the seam where the first and last frames meet, the rock layers, and the sky and ground. If a frame fails to align, add control points on the same stationary features in neighbouring photos and re-optimise. Offset viewpoints may leave parallax errors even with good control points. If there is a coverage gap, add a source frame or reshoot.

**8. Export a JPEG.** In Create Panorama, choose a blended JPEG and keep the canvas at 2:1. A 6,144 × 3,072 px export matches PanoViewer's viewing limit. Keep a higher-resolution master separately if you need it. Save the PTGui project so you can adjust the stitch later.

**9. Check in PanoViewer.** Put the JPEG directly inside a folder accessible in the iPhone Files app. In PanoViewer, choose Folder from Files, select the folder, and tap Start Pano Viewer. Turn all the way around and look straight up and down to check coverage and seams.

## PTGui references

Spherical panorama capture and stitching

Video tutorials including editing and viewing spherical panoramas

# Appendix C  How the demo spherical panoramas were made

StrataKernel captured the source photos for the 360° × 180° demo panoramas with a DJI Osmo equipped with an X3 camera. DronePan automated the capture sequence. Kolor Autopano Giga (APG) stitched each set of overlapping photos into one spherical panorama for viewing in PanoViewer.

## Capture with the DJI Osmo X3 and DronePan

The original Osmo is a handheld camera system with a motorised gimbal. Set it on a stable mount at the chosen viewpoint. The X3 takes the individual still photos. In versions that supported the Osmo, DronePan used the gimbal to move the camera through a sequence of headings and tilt angles and trigger the shutter at each position.

Keep the mount in place during the sequence so nearby rock faces and more distant features stay aligned. Check that adjacent frames overlap, including across rows and at the wraparound seam. Inspect the coverage above and below the horizon. If the gimbal leaves a gap, capture supplementary frames as close to the same viewpoint as possible.

## Stitch the source photos in Autopano Giga

1. Copy the original photos for one viewpoint to a computer and load that set into Autopano Giga. Run automatic detection to match features in the overlap and group the photos into a panorama.

2. Open the panorama editor. Check the alignment, level the horizon and set the projection to Spherical. Inspect the seam, sky and ground and correct mismatched control points or incomplete coverage before export.

3. Render a full 360° × 180° equirectangular image on a 2:1 canvas. To view a newly exported JPEG, place it in a folder in Files and open that folder from the PanoViewer start screen.

## Software compatibility

This is the workflow used for the demo collection. DronePan’s release history documents earlier Osmo support. Compatibility with a current iPhone, firmware and app version should be checked before relying on this setup in the field. Autopano Giga is discontinued. Appendix B describes an alternative using iPhone photos and PTGui.

DJI Osmo support | DronePan release history | Autopano Giga archive