

Photography The Milky Way and Galaxy Using Your Smartphone (Apple - iPhone, Samsung Galaxy)

Jim Sakaguchi & Heather Brown

July 3, 2024

Can I use my Smart Phone to Photography The Stars?

- Yes you can.
- iPhone and Samsung offer native features on your smartphone to do long exposure.
- There are third-party application focused on long exposure and some specifically created to photography the stars.
- New models of smartphone may offer the best features and sensors to support this type of photography.

iPhone “Night Mode” compare

The “Night Mode” feature was introduced starting with iPhone 11. Your iPhone model you have can have an impact on the quality of the photo. Between each model, changes were made to sensors and programming that changed f stops.



Source: Ammar Ajjoub Youtube

As you can see from the photos on the left, there are differences in the level of detail (these are post processed) you can obtain.

The following chart shows the difference in camera megapixel, f-stop and lens size equivalent.

Model	Primary	Ultra Wide	Telephoto
iPhone 16 Pro *	48 MP, ??	48MP, ??	??
iPhone 15 Pro	48 MP, f 1.78 24mm	12MP, f 2.2, 13mm	12MP, f 2.8, 77mm
iPhone 14 Pro	48 MP, f 1.78 24mm	12MP, f 2.2, 13mm	12MP, f 2.8, 77mm
iPhone 13 Pro	12 MP, f 1.9, 26mm	12 MP, f 1.8, 13mm	12 MP, f 2.8, 77mm
iPhone 12 Pro	12 MP, f 1.6, 26mm	12 MP, f 2.4, 13mm	12 MP, f 2.0, 52mm
iPhone 11 Pro	12 MP, f 2.4, 26mm	12 MP, f 1.8, 13mm	12 MP, f 2.0, 52mm

* Release Sept 2024, all specs have not been released.

For more details about the comparison please see following Youtube video.

<https://www.youtube.com/watch?v=iiFXCVuIDJ4>

Long Exposure with iPhone using “Night Mode”

Taking **long exposure photos** with your **iPhone** using a native application called **Night mode**.

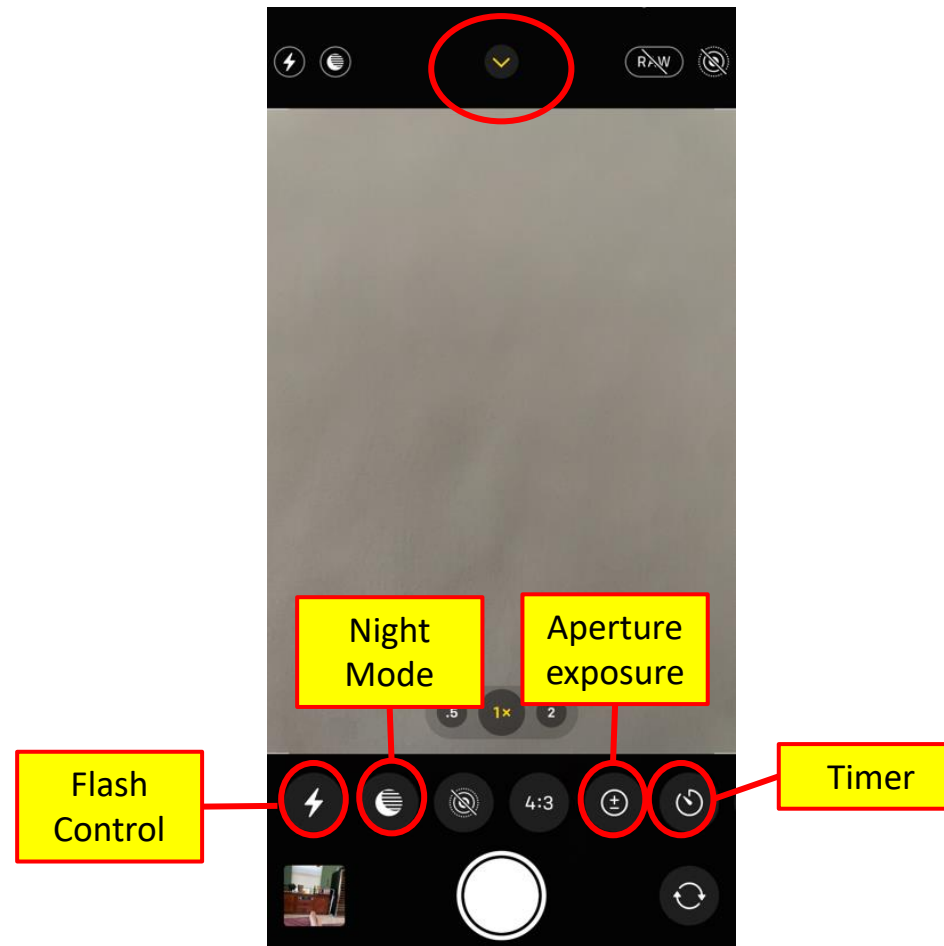
- ❑ **Open the Camera App:** Launch the **Night mode**. **If set to auto it will automatically come on in dark environment.** on your iPhone
- ❑ **Enable Night Mode:** In low-light situations, **Night mode** turns on automatically. You’ll see a crescent moon icon at the top left corner of the screen. If it’s not already active, tap the icon to enable Night mode.
- ❑ **Adjust Exposure Time (Optional):** To experiment with Night mode, tap the **timer icon** (looks like a clock) in the row of options at the bottom of the screen. You’ll see two options:
 - **Auto:** The exposure time is determined automatically.
 - **Max:** This uses the longest exposure time available. Drag the slider left or right to choose between these options. The setting you choose will be saved for your next Night mode shot.
 - Handheld – 10 seconds (not recommended)
 - Tripod (camera senses a stable platform) you can do up to 30 seconds.
- ❑ **Hold Steady and Capture (use tripod if possible):** Once you’ve set up your shot, tap the **Shutter button**. Hold your iPhone as still as possible during the capture. If your iPhone detects movement, crosshairs will appear in the frame—align them to reduce motion and improve the shot.
 - If you don’t have remote to trigger camera use timer. You can set to either 3 or 10 seconds.
- ❑ **View the Result:** After capturing the photo, check out the result! Night mode combines/stacks multiple exposures to create a well-lit image even in challenging lighting conditions.
- ❑ Video that will walk you through Night Mode.
 - [iPhone 12 Pro Night Photography Tutorial By A Pro Photographer \(youtube.com\)](#)

How To Use Night Mode

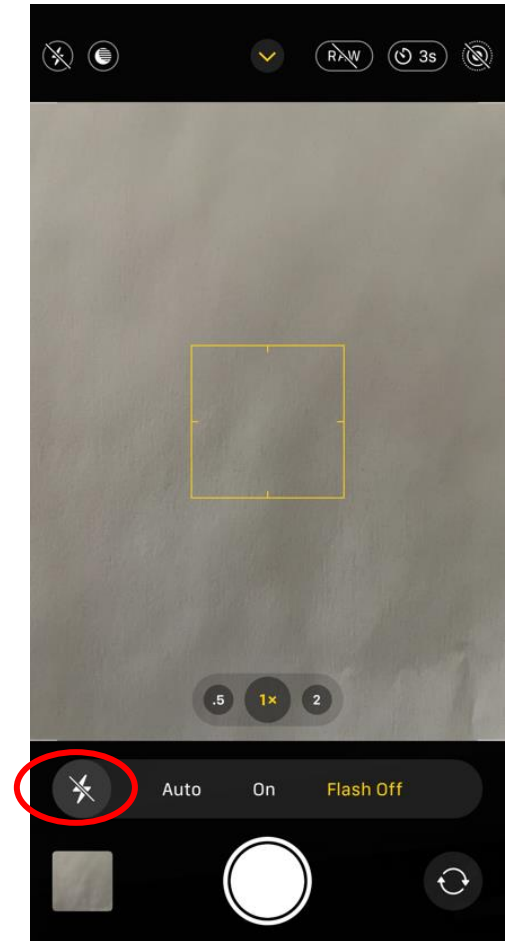
Flips the arrow downward by tapping on it.



When arrow faces down you will see functions of Night Mode, Manual Aperture Exposure and Manual Exposure Time (clock).



Click on Flash and click Flash Off (turn yellow when active).



Using Night Mode

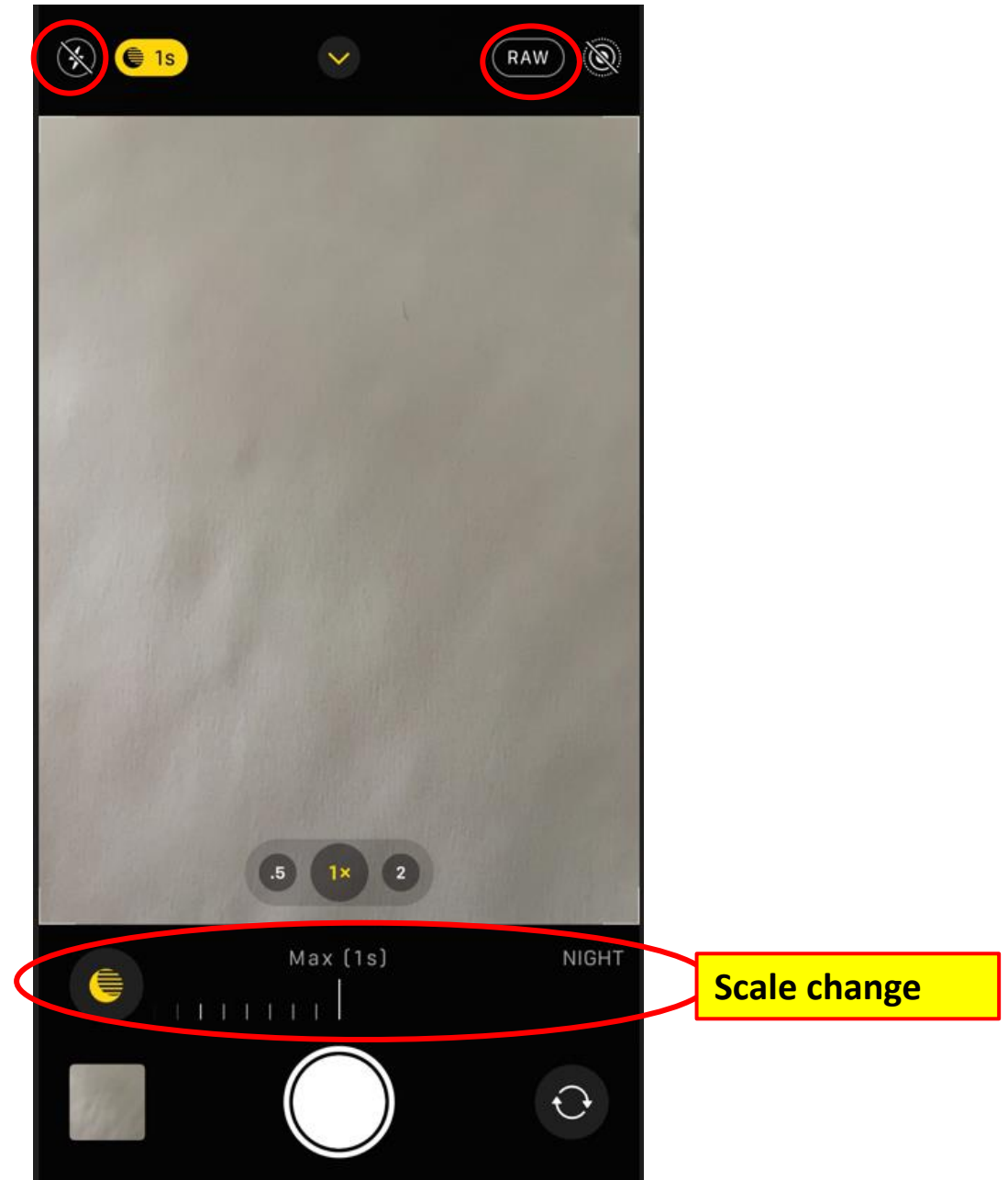
Night mode is available on iPhone model 11 and beyond.

The iPhone Night Mode. Click on Night Mode icon and you will see the scale to change the time. Set to max and try. May need to try various levels.

Make sure flash is set to off mode.

For maximum file size, click on “Raw”

Use timer if you do not have a remote to trigger camera. Ideally, put in tripod and use a remote to trigger your phone camera.



iPhone 12 pro vs. 14 pro compare.

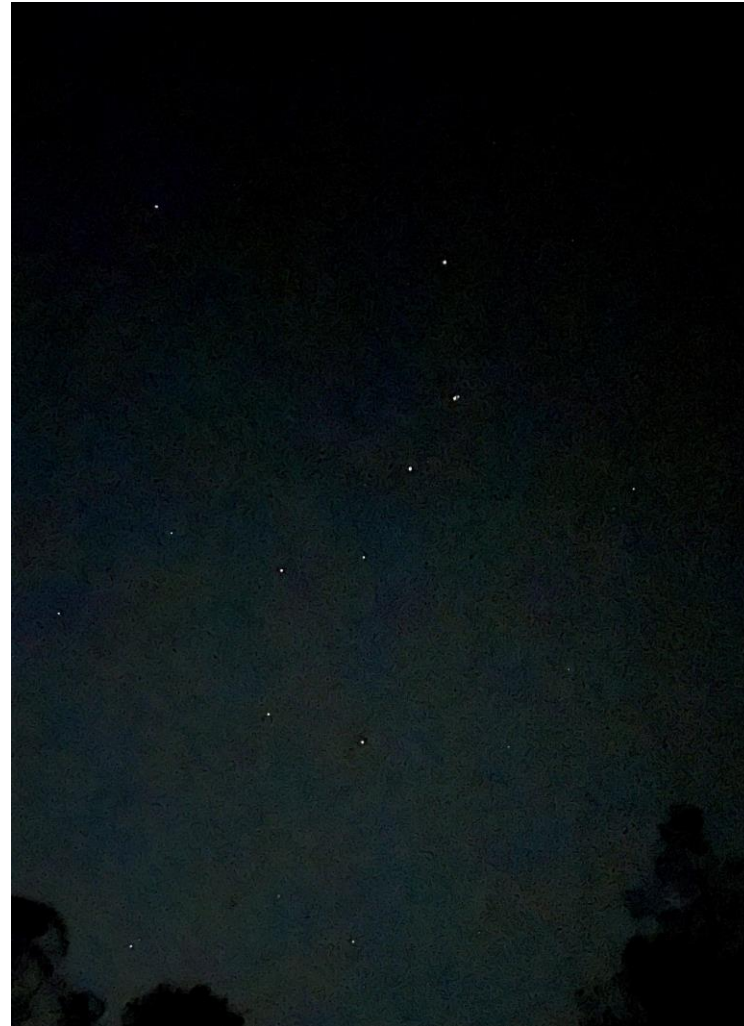
Night Mode

8,000 iso, 15 sec
exposure.

26mm equivalent

Editing, used my
native app on iPhone.

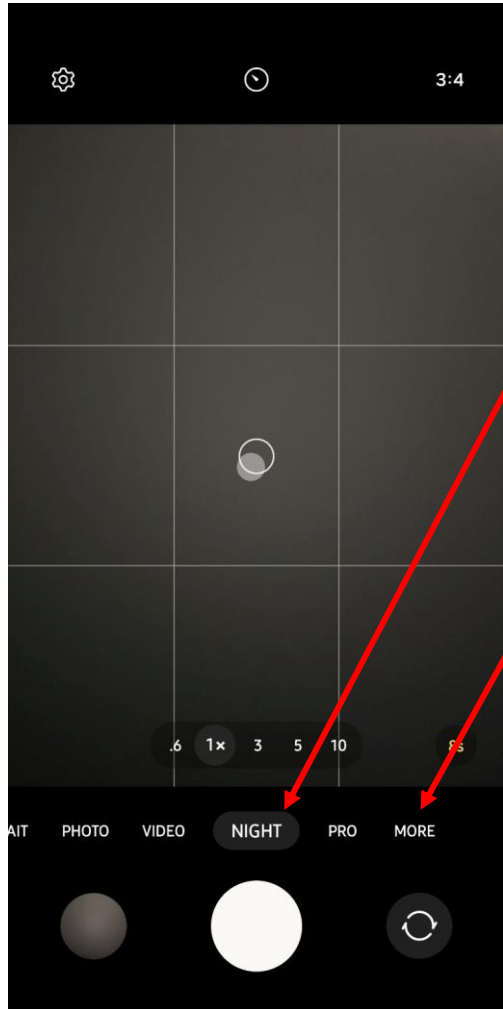
iPhone 12 pro



iPhone 14 pro



Samsung Galaxy Night Shooting Option



**Night Mode, introduced on Galaxy S22 and up
(similar to iPhone Night Mode)**

Pro Mode - Long Exposure (set time, ISO, lens type)

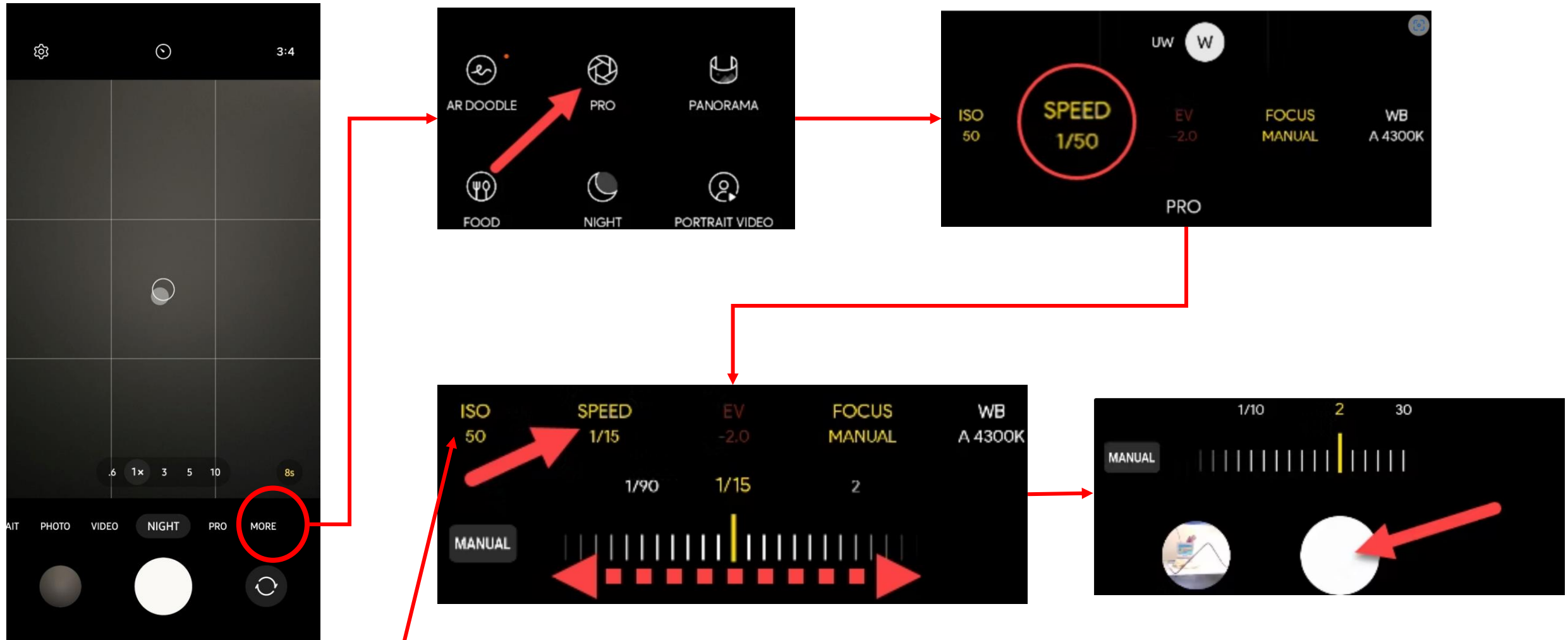
**Expert Raw application design for shooting the
stars**

Samsung Galaxy Pro Mode - Long Exposure Method

Long exposure photography is a technique that captures movement and the passage of time in a static image. It's often used to create stunning effects like light trails from moving cars or silky waterfalls. Fortunately, you don't need a fancy camera to achieve this—you can take long-exposure photos with your **Samsung Galaxy phone**. Here's how:

- 1. Open the Camera App:** Launch the camera app on your Samsung Galaxy phone.
- 2. Switch to Pro Mode:** Tap on "More" in the bottom toolbar, then select "**Pro**" mode. This mode gives you manual control over various camera settings.
- 3. Adjust Shutter Speed:** In Pro mode, look for the setting labeled "**Speed**". Shutter speed is expressed as a fraction (e.g., 1/30) or a solid number (e.g., 5 seconds). Longer shutter speeds allow more light to hit the camera sensor. Slide the dial to adjust the shutter speed to your desired value. Typically, anything longer than **1/30** will result in a slower exposure than a regular photo.
- 4. Stabilize Your Phone:** Since long exposure captures movement, it's essential to keep your phone stable. Consider using a tripod or placing your phone on a stable surface.
- 5. [Pay Attention to Aperture and ISO:](#) While adjusting the shutter speed, also consider the **aperture** (which controls depth of field) and **ISO** (which affects sensitivity to light) to get the best long-exposure photos**

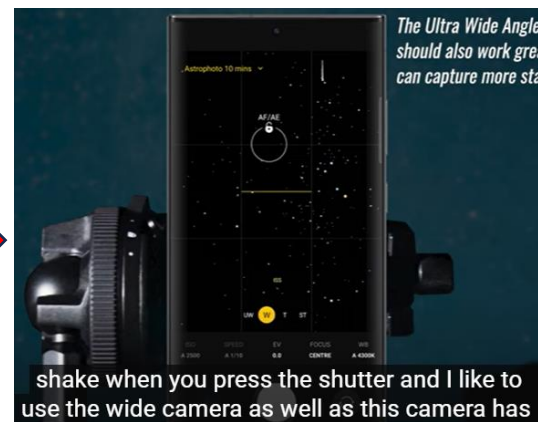
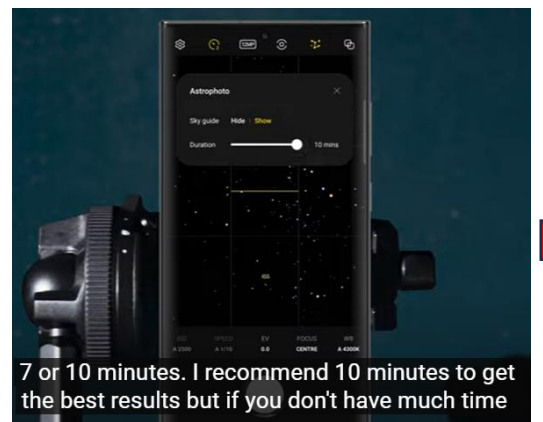
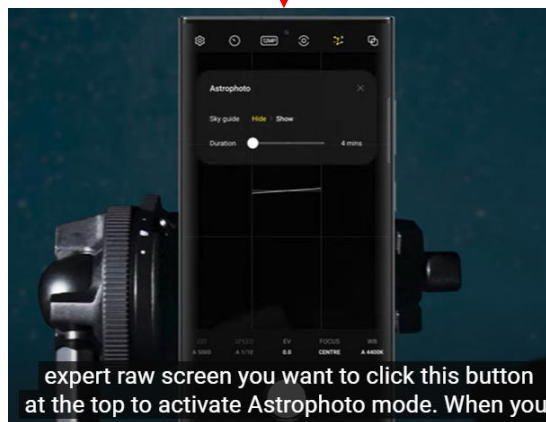
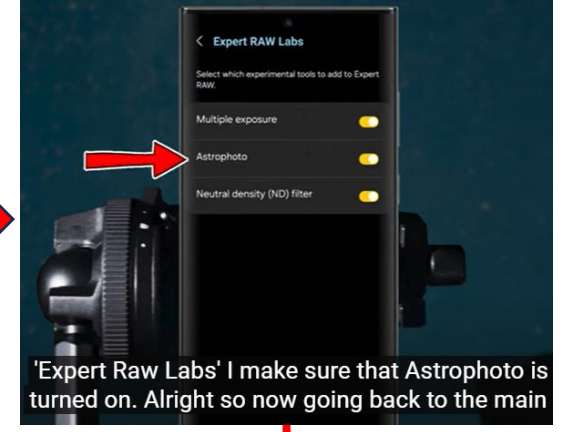
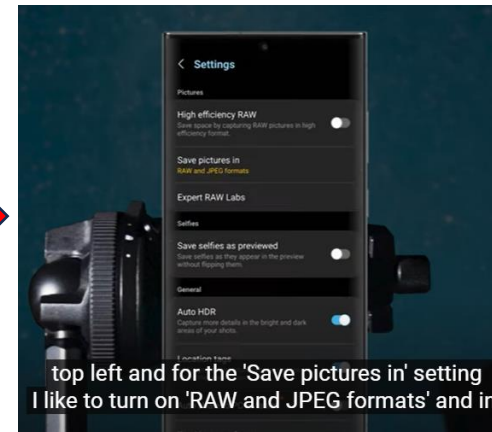
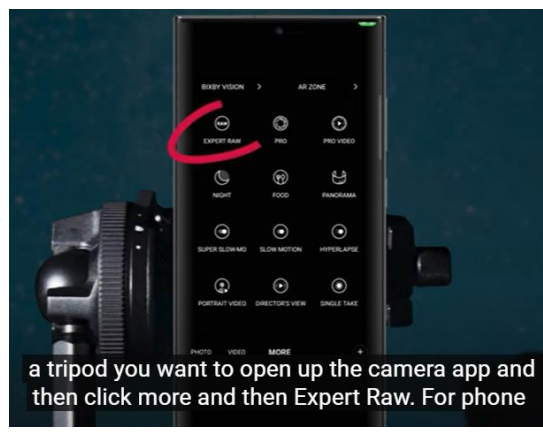
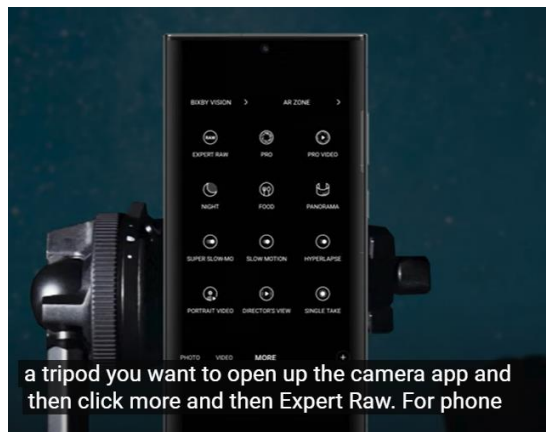
Samsung illustration of how to do long exposure



Use higher ISO levels

Using Samsung Expert Raw To Shoot The Stars

If you do not have Expert Raw app, download at Samsung Store: [Expert RAW \(samsung.com\)](https://www.samsung.com/au/phones/galaxy-s23-ultra/learn-more/expert-raw/)



Use the 10 minute setting. You are NOT doing an 10 minute exposure, the phone is using AI to capture 10 minutes worth of light though multi segments. To test your composition use 4 minute.

Source of above: [How to shoot the Galaxy using a Galaxy phone! // Astrophotography on the Galaxy S23 Ultra - YouTube](https://www.youtube.com/watch?v=...)

Samsung Night Mode

Night mode is a mode on your Galaxy smartphone's camera that helps you to take vivid, optimized photos even in low-light conditions. This means that you can avoid blurry, washed-out night photos.

Pictures taken in Night mode look sharp thanks to AI multi-frame processing, which combines 30 images into one shot, which optimizes color and detail in photos.

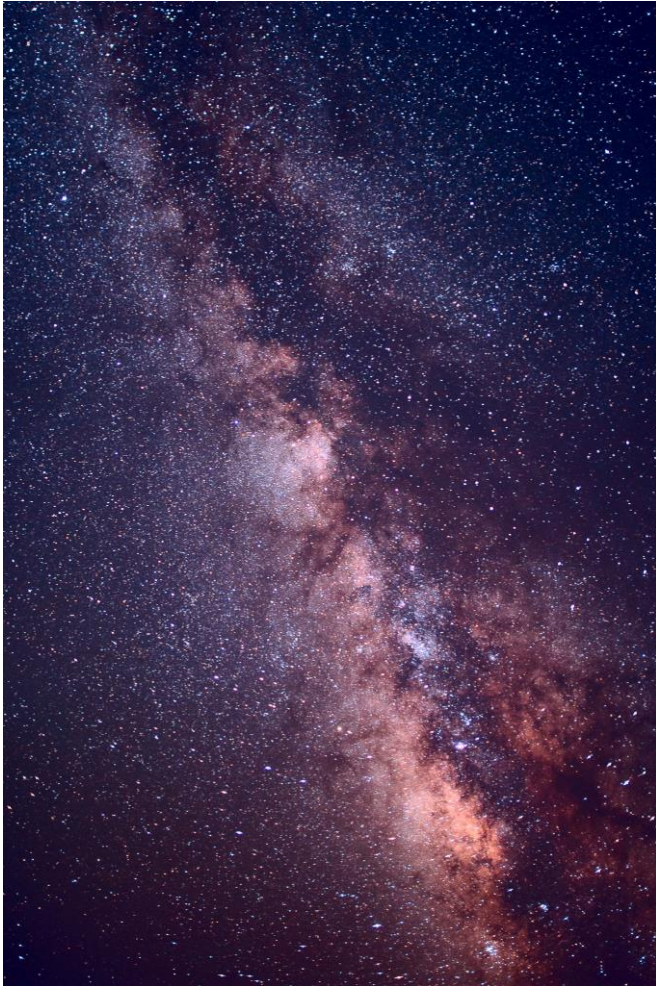
How to use Night Mode

1. Open the Camera app on your Galaxy smartphone
2. Swipe to More and tap Night.
3. When you're ready, tap Capture to take your photo.
4. View the image in your photo gallery

[Nightography | The Best Samsung Night Mode Camera | Samsung UK](#)

[Samsung Nightography: How to take great low-light photos with the Galaxy S22 camera \(xda-developers.com\)](#)

Other Samsung Night Shooting Videos



[Samsung Expert RAW: How to use Samsung's advanced photo app \(androidauthority.com\)](https://www.androidauthority.com/samsung-expert-raw-how-to-use-samsungs-advanced-photo-app-1234567890/)

[Galaxy S23 Ultra: How to Capture the Night Sky | Samsung \(youtube.com\)](https://www.youtube.com/watch?v=1234567890)

[How to Take Long Exposure Photos on a Samsung Galaxy Phone \(howtogeek.com\)](https://www.howtogeek.com/1234567890/how-to-take-long-exposure-photos-on-a-samsung-galaxy-phone/)

[Photographing THE MILKY WAY With The Samsung GALAXY S21 ULTRA \(youtube.com\)](https://www.youtube.com/watch?v=1234567890)

Third-Party Applications For Apple and Samsung

There are a number of third-party products that support long exposure and some are specific to shooting the stars. The following links are articles talking about the “best” apps.

[8 Best Long-Exposure Apps in 2024 \(iPhone & Android Options\) \(expertphotography.com\)](#)

[How To Use The Astrophoto Feature On The Samsung Galaxy S22 \(slashgear.com\)](#)

Based on the articles above we have documented the apps in the next two slides with some additional information to help you select one if you wish to use.

Long Exposure/Night Applications - iPhone

These applications work on the iPhone. We have quickly reviewed and tried a few of these. Our suggestion is to go to each of the sites (links), read through the descriptions and then load one or two onto your iPhone. Spend the next few weeks reading the tutorials and trying them out at night. Practice makes perfect.

Information Areas	NightCap Camera	StarryLens - Night Camera	AstroShader	Reeflex Pro Camera	ProCam - ProCamera	Camera+ Pro Camera and Editor	Slow Shutter Cam
Phone Compatibility	Apple	Apple	Apple	Apple	Apple	Apple	Apple
Application Links	NightCap Camera on the App Store (apple.com)	StarryLens - Night Camera on the App Store (apple.com)	AstroShader on the App Store (apple.com)	Reeflex Pro Camera on the App Store (apple.com)	ProCamera - the next dimension in iOS mobile photography! (procamera-app.com)	Photon: Pro iOS Camera Made Easy	Slow Shutter Cam - Cogitap Software
Price	\$2.99	free (offer in other apps)	Free	Free	\$9.99	free	\$2.99
Apple Store Review Rating	4.3	4.4	4.3	4.5	4.7	4.5	4.7
Software Version	iPhone 14 later, Apple watch 3.0, iPad 14 later, iPod Touch 14 later	Requires iOS 14.0 or later and a device with the A12 Bionic chip or later.	iPhone 14.0 later, iPod Touch 14.0 later	iPhone 16.0 or higher	iPhone 15.1 later, Apple watch 8.0, iPad 15.1 later, iPod Touch 15.1 later	iPhone 15 later, Apple watch 6.0, iPad 15 later, iPod Touch 15 later	iPhone 13 later, Apple watch 4.0, iPad 13.1 later, iPod Touch 13.1 later

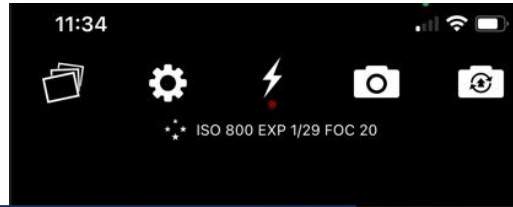
Long Exposure/Night Applications - Samsung

One of these applications works both on Apple and Samsung. The reminder are for Samsung. Again, go to the link and read to determine which is right for you. Then try it out and practice.

Features/Info Categories	ProShot	Manual Camera: DSLR Camera Pro	Long Exposure - Motion ProCam	Expert Raw Astrophoto Feature On The Samsung Galaxy with
Phone Compatibility	Samsung, Apple	Samsung	Samsung	Samsung
Application Links	ProShot — The best pro camera for Android, iPhone and iPad — Rise Up Games ProShot for Android — Rise Up Games	Manual Camera: DSLR Camera Pro - Apps on Google Play	Long Exposure - Motion ProCam - Apps on Google Play	Expert RAW (samsung.com)
Price	\$6.99	\$4.99	\$2.49	Free
Apple Store Review Rating	4.5	4.2	2.8	4.5
Software Version	iPhone 15 later, Apple vision 1.0 later, ipad 15 later, iPod Touch 15 later, Mac 12 later Android 5.0 and later			

Night Cap Review

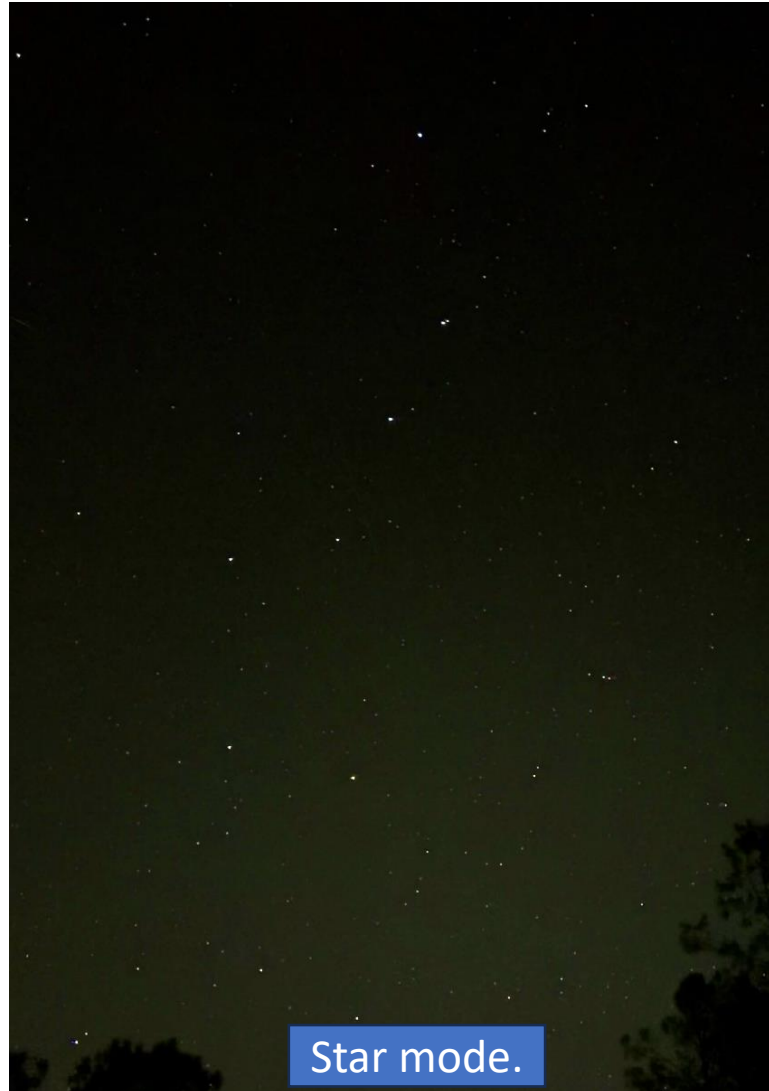
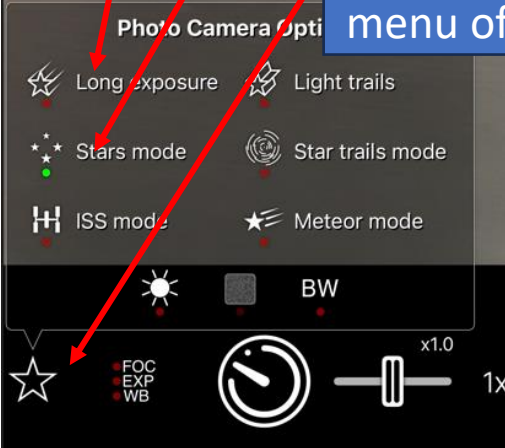
[Tutorials | Nightcap Camera](#)



3. Take multiple shots and stacks

2. Star mode shooting

1. Click on Star and you get a menu of options

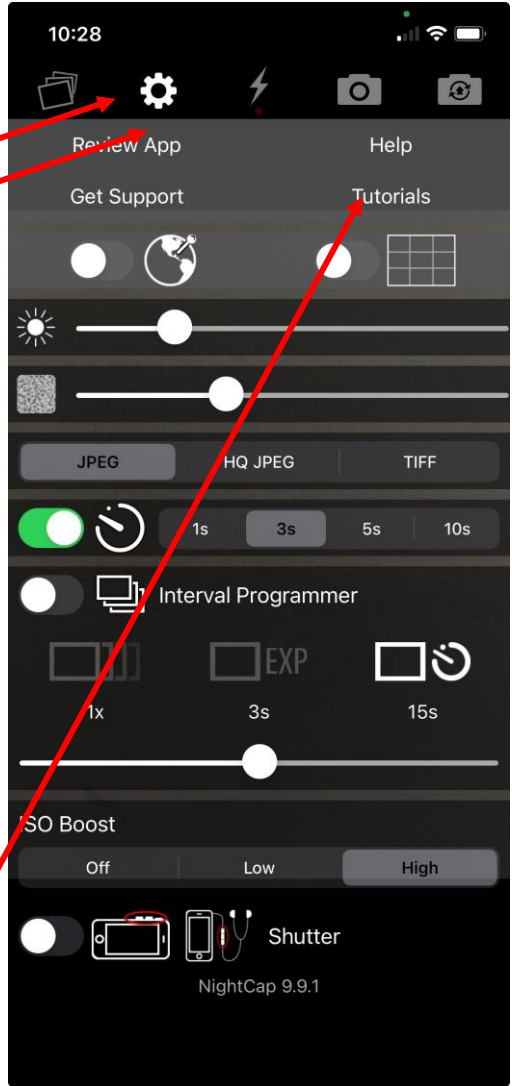


Star mode.

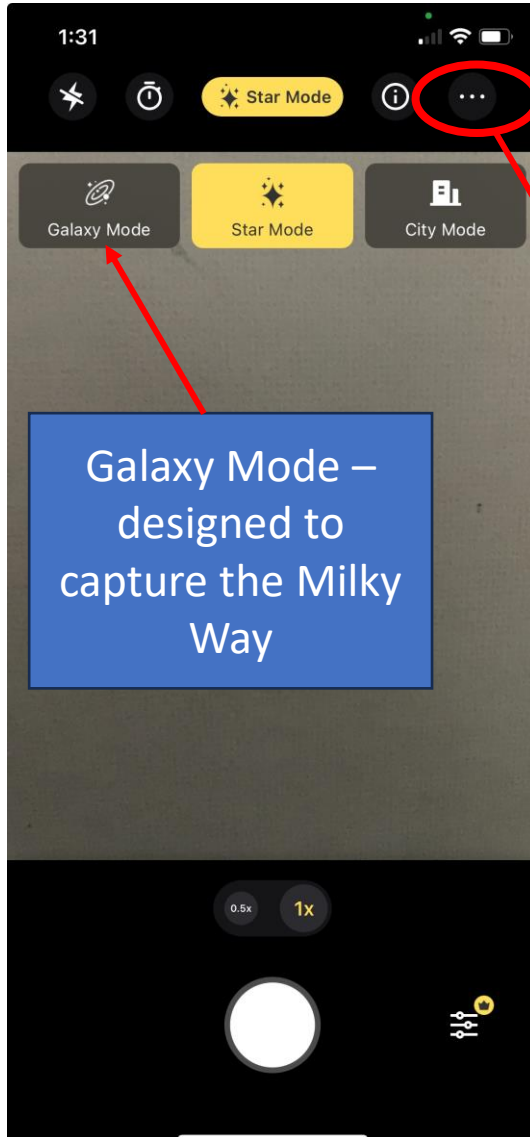
Other Approach. Click on Settings

Now to manually control exposure time, ISO

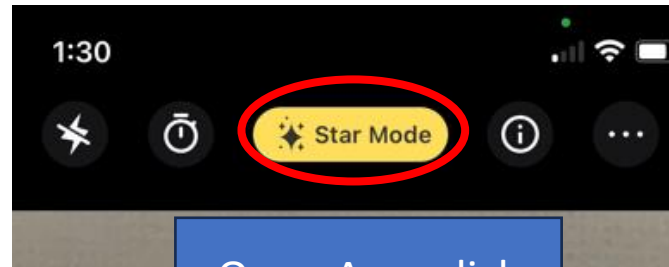
Load the app and you can use tutorials in manual setting area.



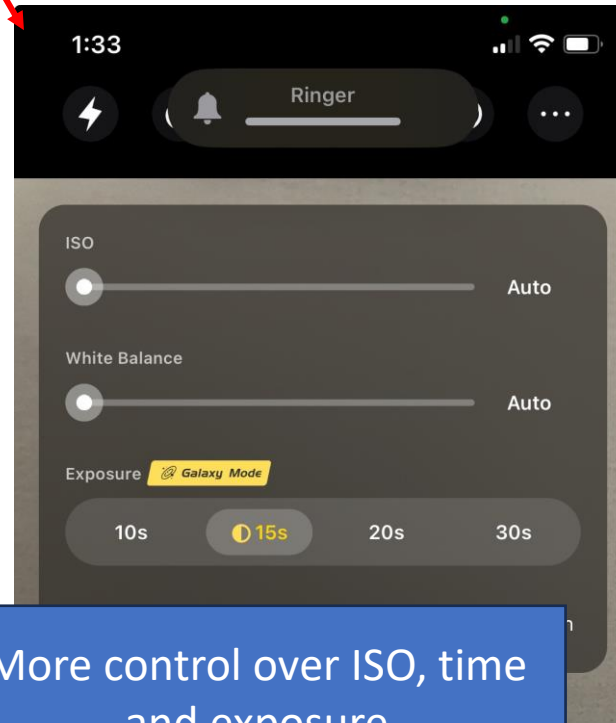
StarryLens Review



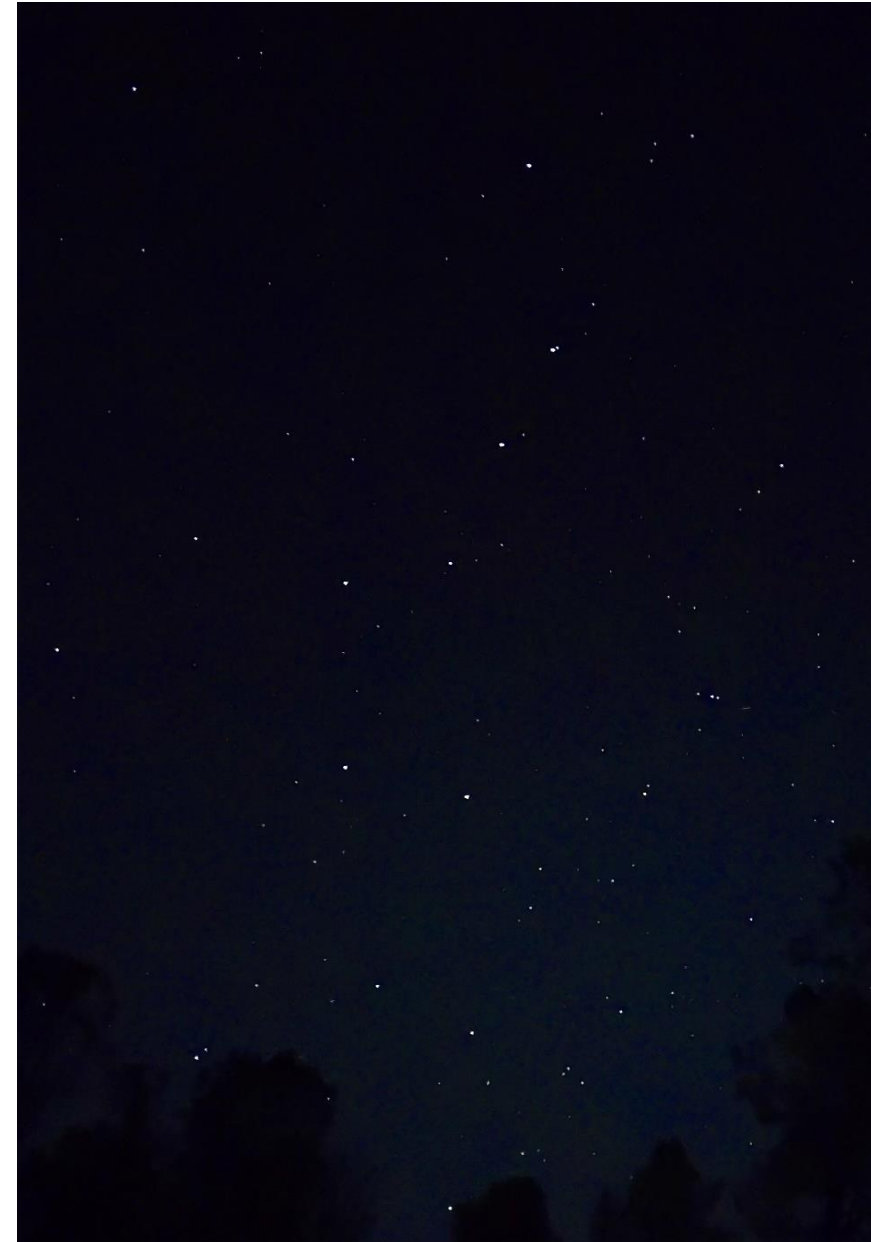
Galaxy Mode –
designed to
capture the Milky
Way



Open App, click
on Star Mode



More control over ISO, time
and exposure



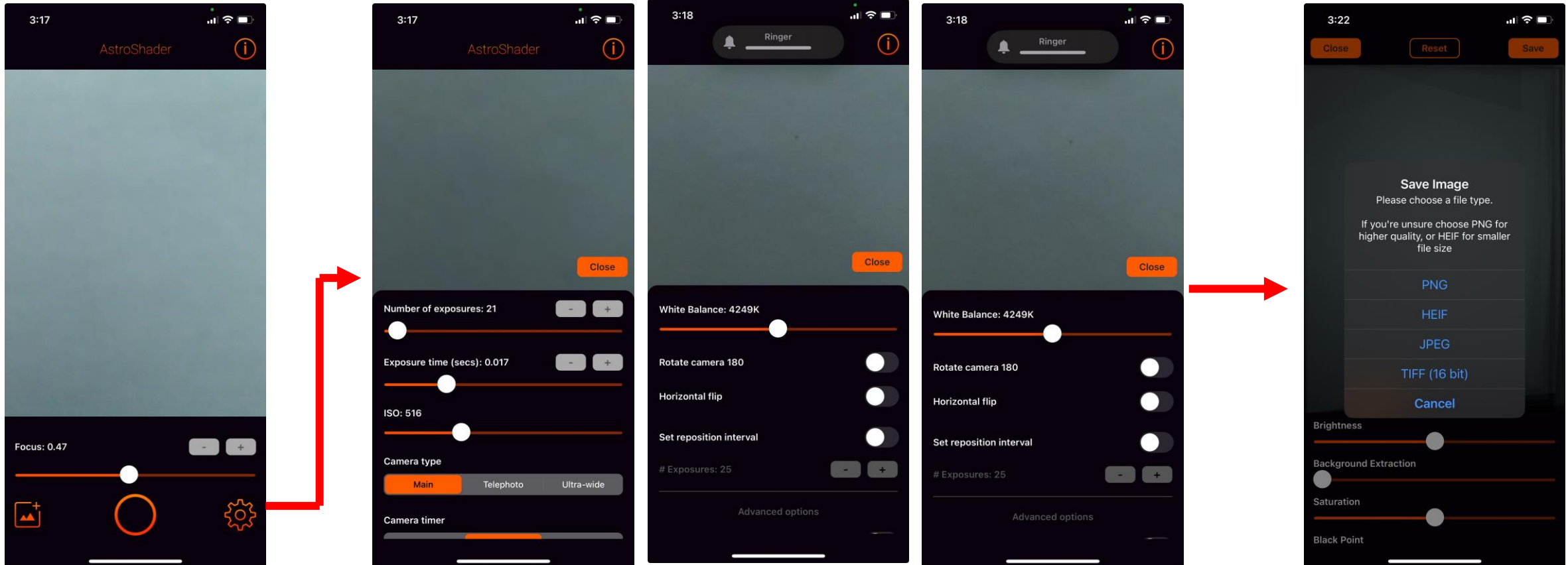
Astro Shader

Tutorial

This application is more advanced than the prior two. It's based on taking multiple photos and stacking them. It does not require set-up, the three middle screen shots are the main controls. Please watch the two tutorial links and then try it out at night.


[Free app for taking photos of the stars with iPhone \(youtube.com\)](#)

[AstroShader App Example \(youtube.com\)](#)



Tripod Options

Mount Adapter, to your existing tripod



Phone Tripod Mount Adapter with Camera Remote and Wrist Strap, Universal Cell Phone Tripod Mount Holder, Swivel Design, Compatible with iPhone, Samsung, Selfie Monopod, for Taking Photos and Videos

Brand: SharingMoment

4.6 ★★★★★ | 1,082 ratings | Search this page

100+ bought in past month

-38% \$7.99

List Price: \$12.99

✓prime One-Day

FREE Returns

Best price

You could have earned \$340.71 in rewards on your Amazon purchases over the past year with 5% back with an Amazon Prime Store Card. Apply now and get a \$60 Amazon Gift Card upon approval. [Learn more](#)

Color 2-Pack

Brand SharingMoment

Compatible Devices Galaxy S20/Note 10+/Note 10/S10+ and other Android phones, iPhone 11 Pro Max/11 Pro/11/Xs Max/XR and other iOS phones

Product 1.3"D x 1.97"W x 4.84"H

Selfie stick with tri-pod capabilities.



Sensyne 67" Phone Tripod & Selfie Stick, Extendable Cell Phone Tripod Stand with Wireless Remote and Phone Holder, Compatible with iPhone Android Phone, Camera (Black)

Visit the SENSYNE Store

4.6 ★★★★★ | 26,590 ratings | Search this page

Amazon's Choice in Cell Phone Tripods by SENSYNE

3K+ bought in past month

-50% \$19.99

List Price: \$39.99

✓prime Same-Day


FREE Returns

Coupon: Apply \$2 coupon Shop items > | Terms

Save up to 10% with business pricing. Sign up for a free Amazon Business account

Searching **

Size: 67-inch



VICTIV Tripod 74" Camera Tripod for Cell Phone, Aluminum Professional Heavy Duty Camera Tripod Stand, Tripod for Camera DSLR SLR with Carry Bag, Compatible with Canon Nikon iPhone

Visit the Victiv Store

4.5 ★★★★★ | 1,617 ratings | Search this page

Amazon's Choice in Complete Tripod Units by Victiv

1K+ bought in past month

-25% \$29.99

List Price: \$39.99

✓prime Overnight

FREE Returns

Exclusive Prime price

Best price

You could have earned \$340.71 in rewards on your Amazon purchases over the past year with 5% back with an Amazon Prime Store Card. Apply now and get a \$60 Amazon Gift Card upon approval. [Learn more](#)

Color Orange

Brand Victiv

Color Orange

Compatible iPhone 15 14 13 12 11 Pro/XS/XR/MAX/11/8 Plus/X/7

Another inexpensive option. I do not have any experience with this one.

Homework Assignment – Smartphone Users

- Read the app guides and watch the tutorials.
- The apps are fairly-straight forward but you need to practice with them, especially in a dark environment. Some of the feature won't work in light. Need the dark setting. Head out somewhere and practice.
- We would like to hear about experiences with the apps you chose to use. This is an informal learn from each other by trial, success and error with our smartphones.
- Share pictures: good, bad and ugly. This is all about sharing our experiences. My first time using AstroShader I got nice all black-out pictures (used wrong exposure time setting). Bring your pictures on a flash drive or email ahead of time to Jim. jimsakaguchi57@gmail.com
- **Meet back at Orchard Creek Lodge – Media Room.**
 - **July 15th**
 - **Time: 1:30 – 3:30pm**

Some local place to try things out.

There is no perfect place to shoot at night due to light pollution in the local area. However, this is about practicing with your smartphone/app in the dark. The following are a few location suggestions:

Local within Sun City:

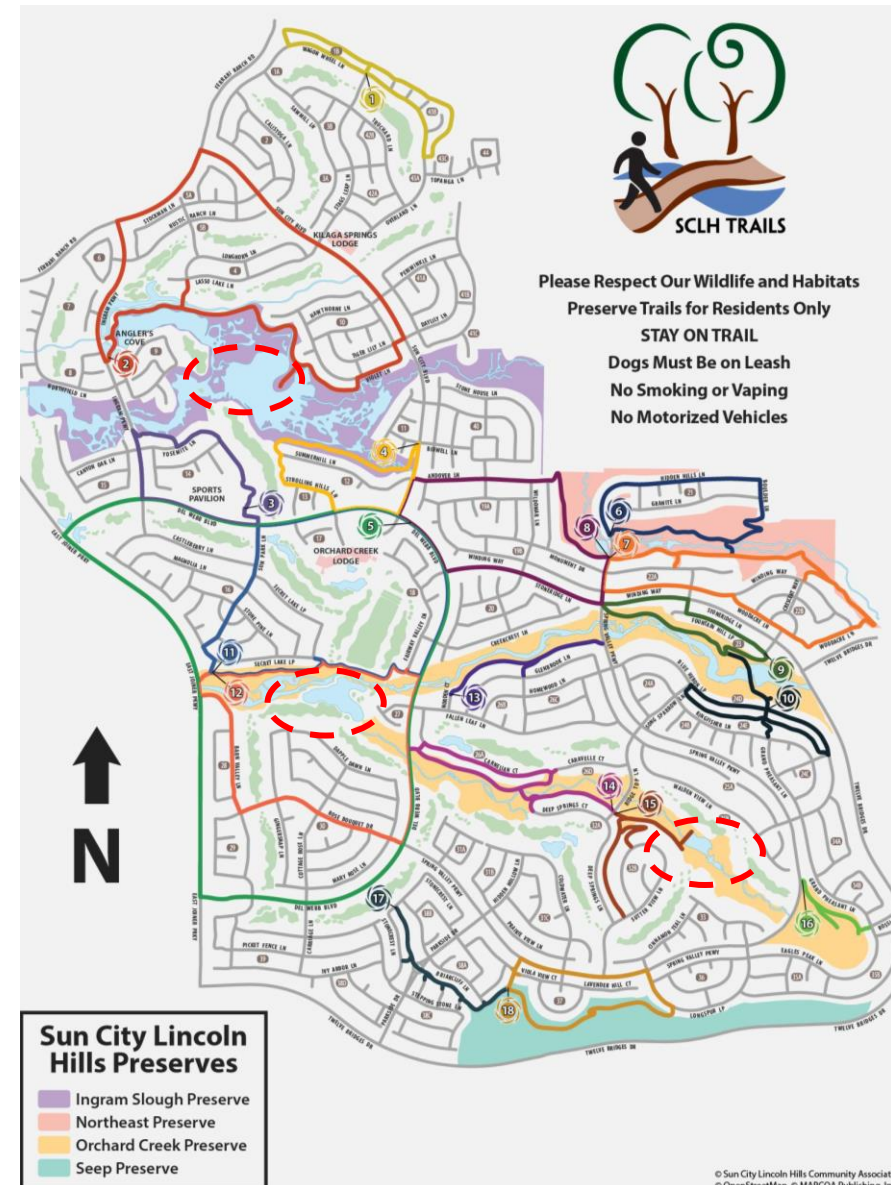
- Your backyard. Yes, it's right there...
- Head out to one of the trails in Sun City.

Further out:

- Foresthill Road in Auburn, head towards Westville/Robinson Flat Park.
- "Old" Foresthill Road in Auburn, runs semi parallel to Foresthill road.
- Camp Far West Bridge
- Local fields, heading north of Lincoln, backroads, off the highway.
- Penn Valley, highway 20, (head to Grass Valley, take highway 20 towards Lake Wildwood. You'll find area along 20 or side roads.

This free app allows you to put a location in and see the conditions and light pollution level. There are others you can google or search the App store.

[Good To Stargaze on the App Store \(apple.com\)](https://apple.com)



Local Hands-On Session

Monday July 8th, starting at 8:00pm here in Sun City, Les has volunteered to hold a session familiarizing participants with shooting at night. Les will cover setting-up your camera per items discussed in Greg's presentation. Jim and Heather will be available to assist on the smartphones. The intent is for participants to get use of working in the dark, it is not the ideal location from a light pollution perspective but it's close for everyone and lets folks share and ask questions.

Bring the equipment you will be using.

- Camera / Smart phone
- Tripod
- Remote

For an address put into your GPS, 140 Boulder Ct, Lincoln CA. Park here and we will walk over near the large water storage tanks.



Supporting Field Trip

- Date: August 4 and 5, 2024
- Location: Caples Lake and Silver Lake in Carson Valley, south of Lake Tahoe.
- Group Shoot Gathering:
 - August 4th at Caples Lake, start at 5:00pm
 - August 5th at Silver Lake, start at 5:00pm
- Refer to trip planning packet for more information.