



There's an App for that

Rich Ernst

Photo Apps on Smartphone that go beyond the camera

While out and about taking photos, a smartphone and some photo related apps can help you get that amazing photo. A lot of these apps are very specific for photographers, but there are others that can be used in everyday activities. When we go afield, often we are out of range of WiFi and cell towers, so being able to use the apps offline is a great advantage. Let's look at some that I use; keep in mind that I use an iPhone (although many of these apps are universal and run on all iOS devices), but many of these apps have the same or similar apps for Android. By no means is this an exhaustive search of all the apps out there, and there are hundreds, but these are the ones I find useful. This is simply a survey of how the smartphone may be used in your photography.

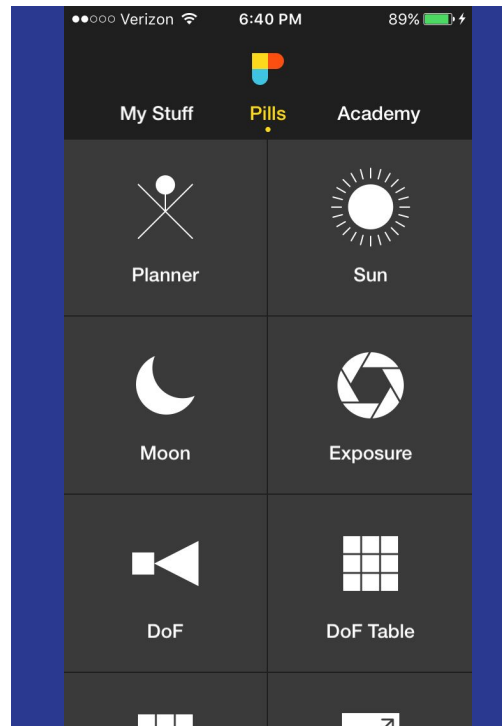
Planning

- The Internet (obviously)
- The best time to shoot
 - PhotoPills
 - Sun Surveyor
 - Photographers Ephemeris
- Where to stay
 - AllStays (Camping, Parks, Forests)
- Where to hike
 - REI Hiking Project
 - AllTrails

Planning can often put you in the right place to get the shot you imagined. This section covers some apps to consider in the planning process.

PhotoPills

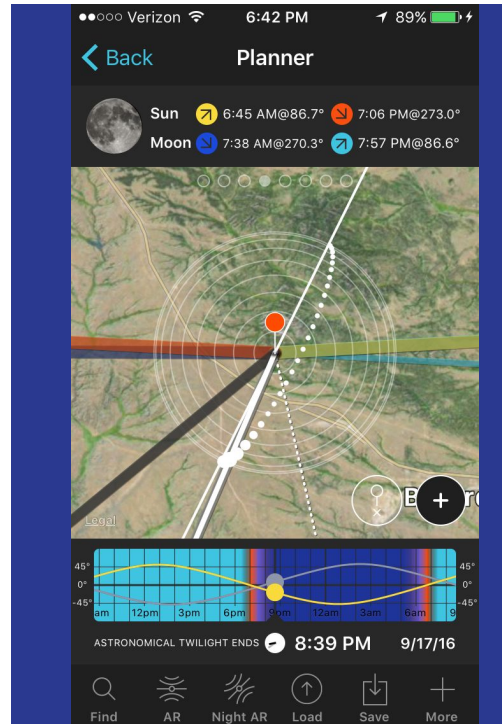
- About \$10
- iOS only with Android promised
- Sun, moon and milky way times and positions
- <http://www.photopills.com/>
- Menu of functions



If you like to plan for the golden hour, blue hour, or the moon setting over a specific object, or the sun rising or setting in a particular place, or even the best time for a Milky Way shot, then this app is for you. The website has lots of text and video tutorials available. As you can see from the menu, there are lots of things you can do with this app. Let's explore some of the planning functions.

PhotoPills

- Move pin to a location--Vedauwoo
- You can save location to use again
- Set Time and date
- View rise and set times
- Slide timeline to view positions of sun/moon
- Lots of live controls on different screens to help visualization



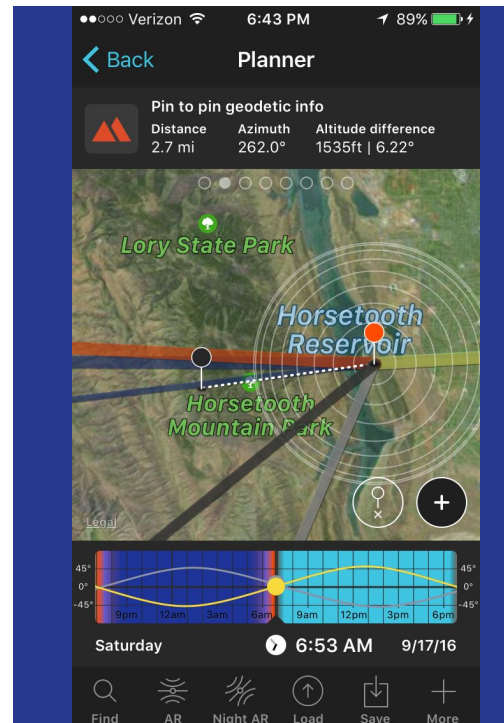
At the basic level, the planner app will show you the locations of the sun, moon and milky way at any time night or day similar to the Photographers Ephemeris that you may be familiar with. Use it to scout the best place to be to get the shot. Find your location and drop a pin there. You can zoom in to earth view to see the location better. Note that you can tap the save icon to allow you to reload that location in the future. Be sure to explore all of the panels (swipe panel above map right or left) and functions (icons at the bottom of the screen).



This shot is from the Vedauwoo club outing. This was the first time I used the app and it had some useful input on where the Milky would show up. It is good to get relatively close to your subject, use a wide angle lens, and keep your shutter speed under 25 sec to avoid star trails. Many of you were at Ken's photoshop workshop where he loaded multiple shots of fireworks as layers, then used the 'Lighten' blend mode to show the fireworks from all layers. I used a very similar technique on this photo. Light painting with a 2 million candlepower light allowed for only a very short on-time for the light; this makes it very hard to get an evenly lit rock. With camera on tripod, take multiple shots. Load the shots as layers and blend with lighten mode to even out lighting on rocks. Since the stars will have moved relative to the rock, mask out the stars on all but the best image of stars.

PhotoPills

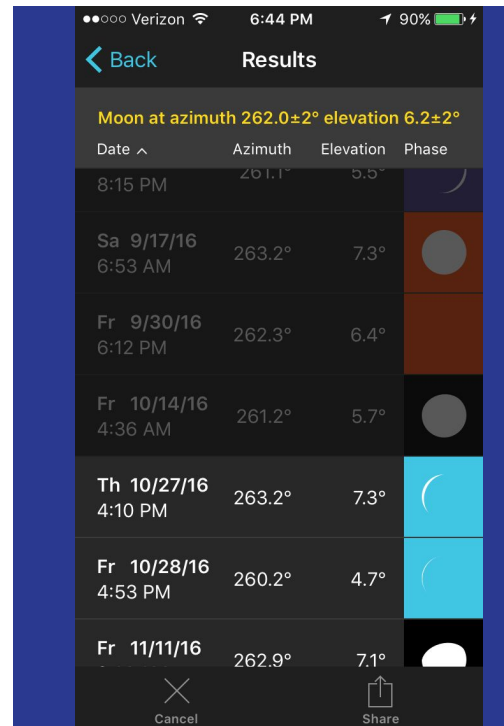
- Set two pins
- Read azimuth (compass bearing) and inclination (deviation from horizontal)
- Find when moon/sun are at that azimuth and inclination by clicking Find icon
- View of Horsetooth from Centennial Dr with harvest moon setting



And now the real magic. If we lived on a flat plain, the sunrise/set times would be what we observe. But living with the mountains, the visible sunrise/set may occur earlier or later than the astronomical due to the topography. This program can help. Set a location where you will be standing for the picture (red pin). Note that you can hit the 'Save' icon to remember locations for future reference. Then set the location of the object you are photographing (black pin), perhaps a hill or mountain. The distance, azimuth, and difference in elevation (with inclination angle) is shown in the top bar (you may need to swipe the bar right or left to get to the correct panel). If you think you will be using these locations again, save as a plan (as opposed to the pin location). Hit the 'Find' icon at the bottom of the page, select sun or moon, and then enter the azimuth and optionally the inclination in the fields at the top of the search page; note that it will usually fill these values for you.

PhotoPills

- Select one of the entries from list, ie. second row
- Phase of moon and time of day indication in right column
- Tap Phase column head to sort by Phase
- Set up camera at 6:53 on 9/17 for harvest moon setting over horsetooth during golden hour



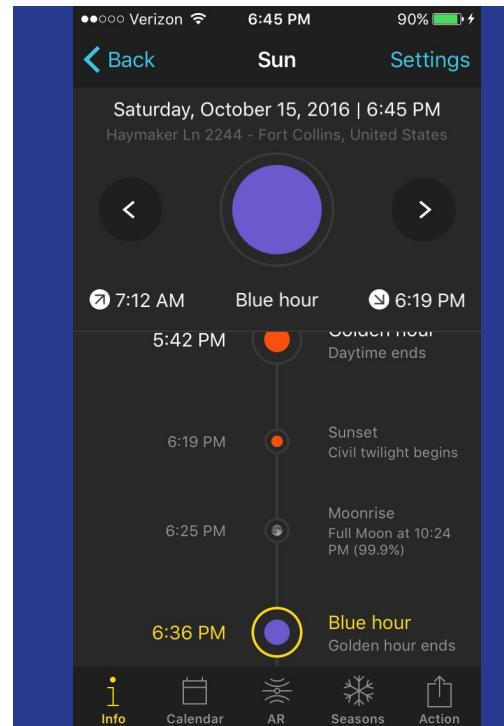
You should see a list of times when the sun or moon is at that azimuth and inclination, plus or minus 2 degrees. The right column contains icons coded to represent the phase of the moon and the time of day/night. You can even sort by the phase (or any other variable shown in the column titles) by tapping on the column title. The second entry in the list just happened to be a full moon (indicated by the full white circle under 'Phase') setting behind the tooth right before sunrise at the golden hour (orange background for golden hour); lucky me.



A little bit off from the center of the tooth, but still nice placement. Be sure to expose for the moon, it is very bright so you will need to increase shutter speed or close down the aperture, and check your exposure. HDR or bracketing may help, particularly when there is minimal light on the foreground.

PhotoPills

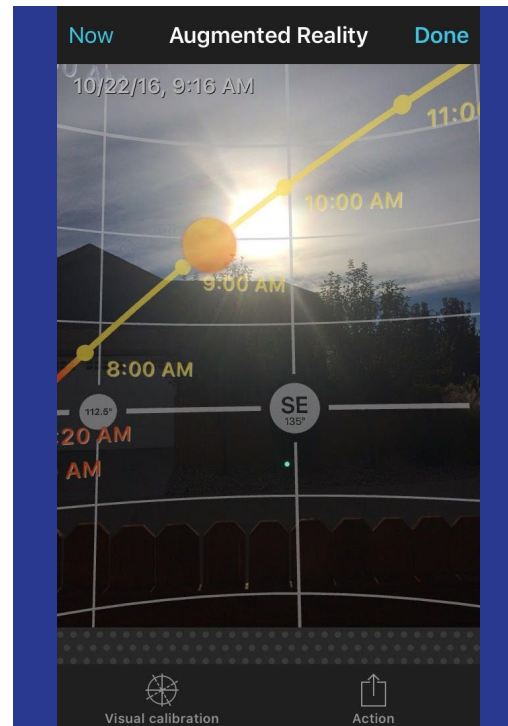
- Ephemeris (positions of astronomical objects)
- Info on the sun, moon and milky way
- More info with buttons at bottom



From the main menu, you can click on the sun or moon icons to see the ephemeris. Hitting the right or left arrows at the top will move you through time. The icons at the bottom offer additional data, possibly more than you want to know.

PhotoPills

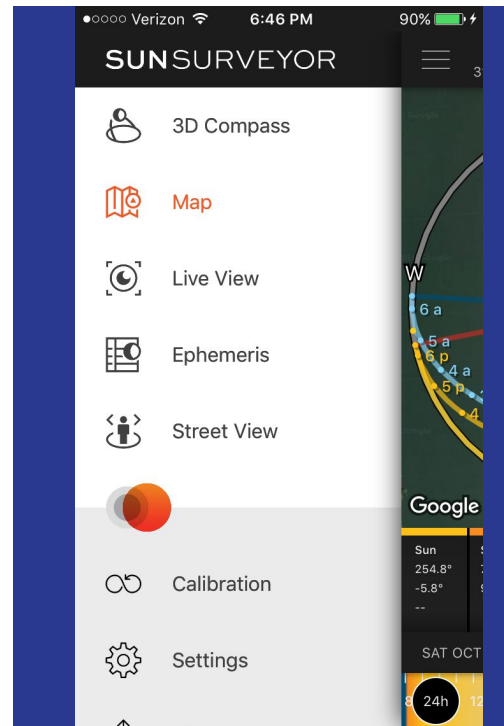
- Augmented Reality (AR) from map page
- Augmentation is the ephemeris
- Reality is camera live view



The AR and Night AR buttons on the map page allow you to view an overlay of the ephemeris onto the camera live view. See where the sun, moon and milky way are and will be. This was the view out my back door.

Sun Surveyor

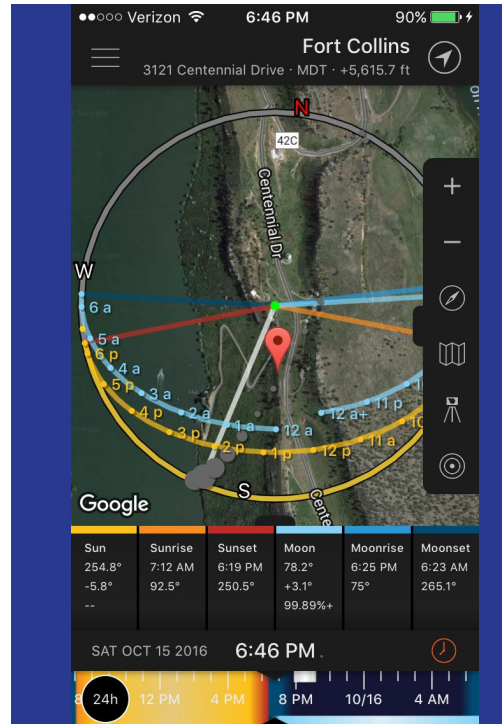
- About \$10
- <http://www.sunsurveyor.com/>
- Menu of functions available
- iOS and Android
- Missing the search for events
- Additional functions: 3D compass and street view



An option for the Android crowd is Sun Surveyor. While it is missing the search function of PhotoPills, it offers a couple of unique features. The menu is shown here, and the two unique functions are the 3D compass and Street View. Check out the website, or search other sites for tutorials about this app.

Sun Surveyor

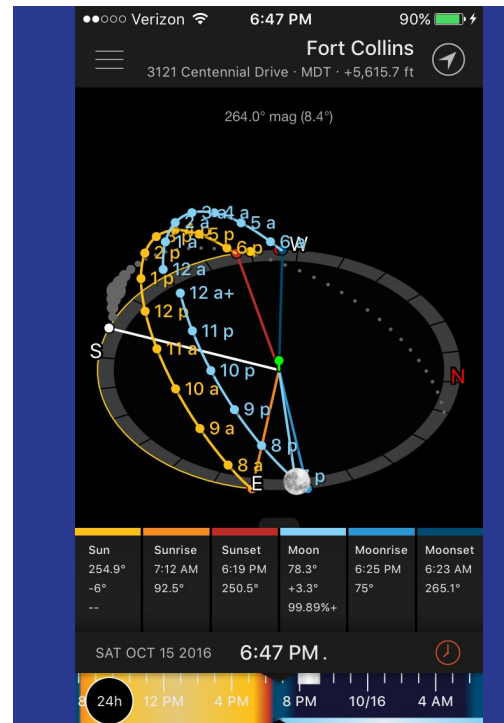
- Map view
- Set location, time and date
- View sun/moon/milky way positions
- Live controls to show progression of sun/moon



Similar to the other apps, you get an overlay on a map (or earth view) with the direction of sun/moon/milky way. Tap and drag on the timeline at the bottom of the screen to change the time (watch the positions of the sun/moon as you do). You can explore the host of buttons on the right to see what they do.

Sun Surveyor

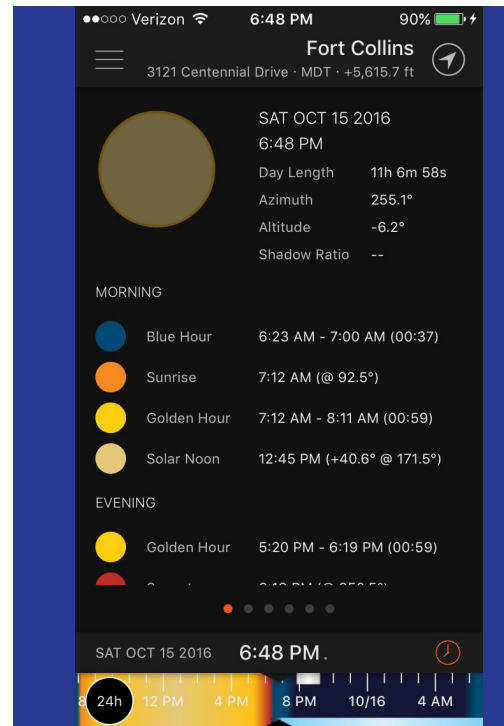
- Live 3D compass
- Move phone as you would a compass



This 3D compass uses the sensors in the phone to show in real time the positions and track of the sun and moon.

Sun Surveyor

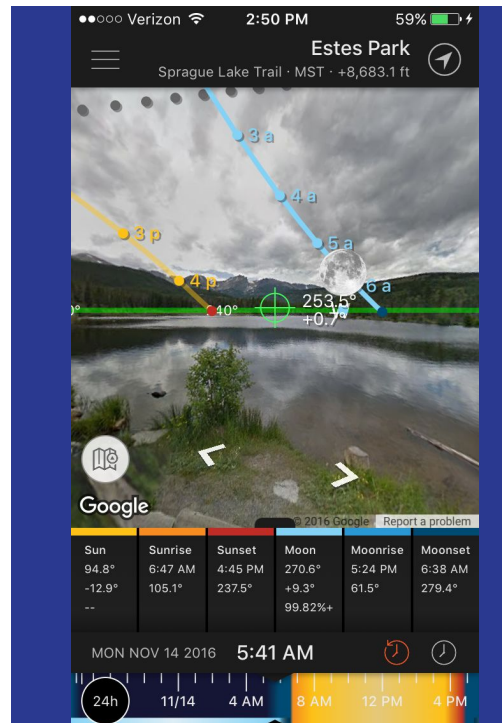
- Ephemeris
- Several pages for various events



This is one of many pages of ephemeris data. Swipe right or left to see the others. And again swipe the timeline to see real time changes.

Supermoon 11/14

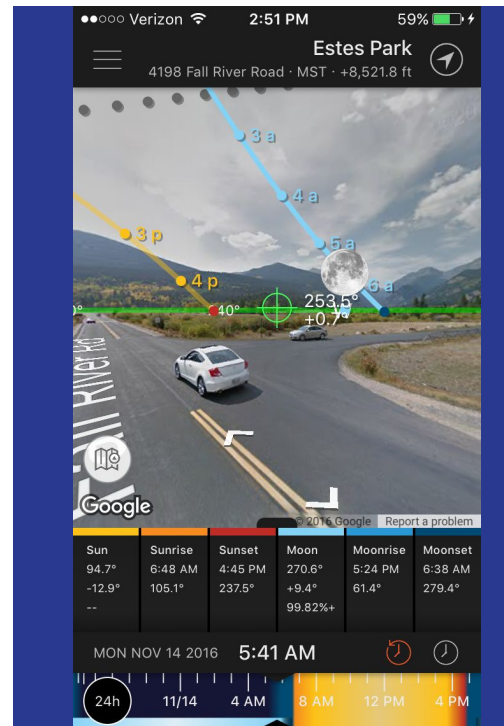
- Using Sun Surveyor
- Set location, time and date
- If street view is available, you will see the google icon in lower left corner of map
- Street View at Sprague lake, RMNP
- I didn't take photo, but Google did



Let's look at a real situation coming up, a supermoon on 11/14/16. Similar to the AR views in these apps, you can switch between the 2D map view and the street view, the same as with google maps. You can rotate the street view as you would with google view, but you will have the sun/moon/milky way superimposed. Did you ever try google street view up at Sprague lake in RMNP? You can actually do a virtual walk around the lake and look around. If you use this app, then you will have the added benefit of seeing the sun/moon on the view. Pretty amazing! The track and position of the sun and moon, as well as the milky way is superimposed over the google image. This is also the view you would have in AR mode if you were standing there. Since Google concentrates coverage mostly to roads and streets, this may have limited application because landscape photographers are generally off the beaten path.

Supermoon 11/14

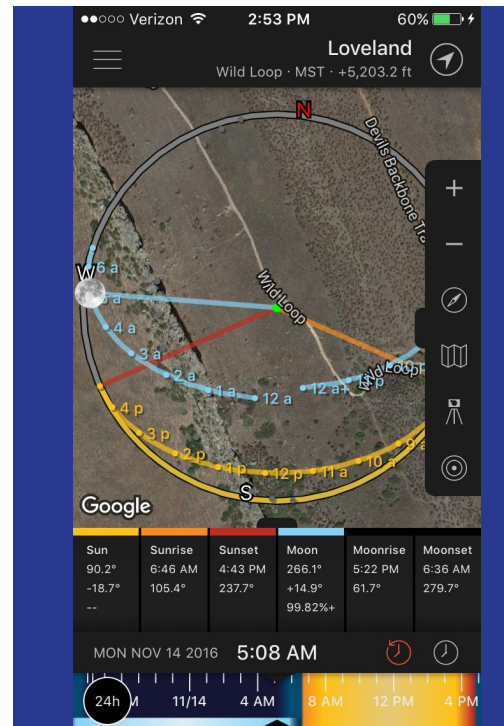
- Horseshoe Park RMNP
- Junction End-o-valley



An alternative location, probably better than Sprague, would be Horseshoe park.

Supermoon 11/14

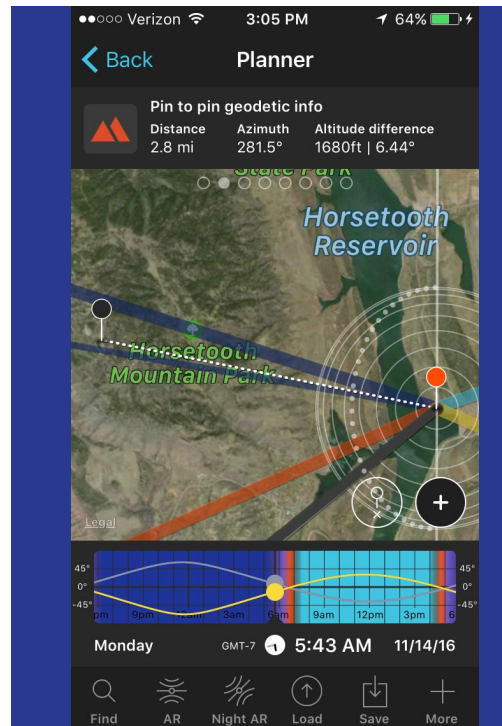
- Devils Backbone



How about a little closer to home at Devils Backbone.
Would have a little hiking to do.

Supermoon 11/14

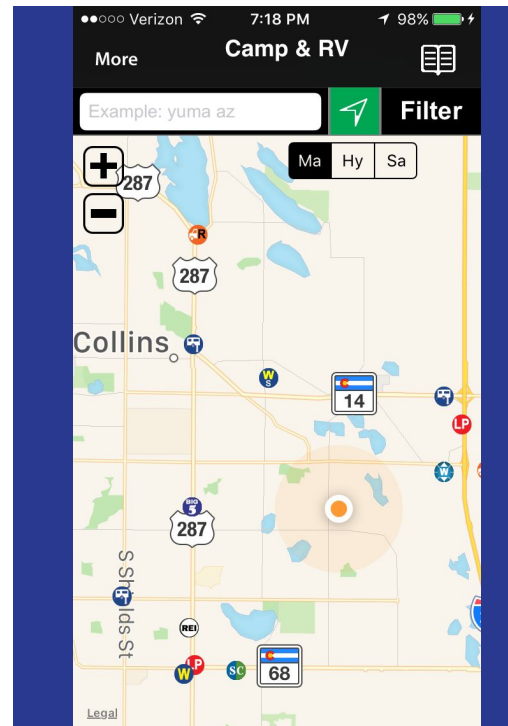
- Photo Pills
- Horsetooth mountain
- From dam on south end of Centennial drive



Step out of the car to get the moon over Horsetooth.

AllStays

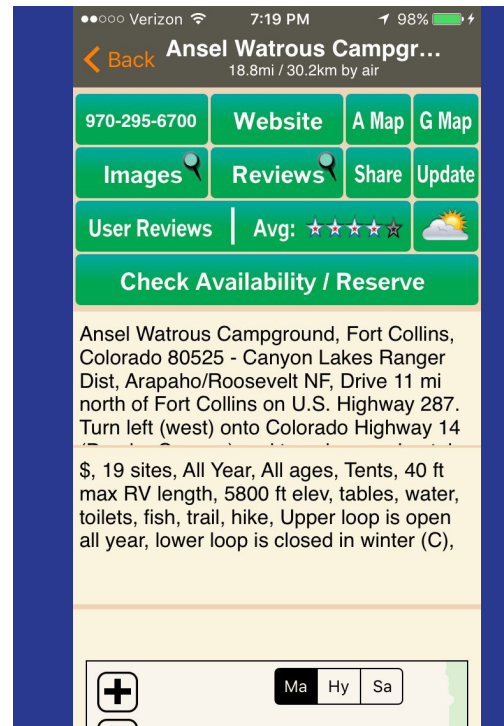
- Parks, campsites, rest areas, etc.
- About \$10
- Same info available on the web for free
- <http://www.allstays.com/>
- iOS, Android and web
- Needs internet connection



This is one of the most comprehensive databases of park and camping destinations. Be sure to check out the web version if you do not have access to the program on a smartphone, it's free.

AllStays

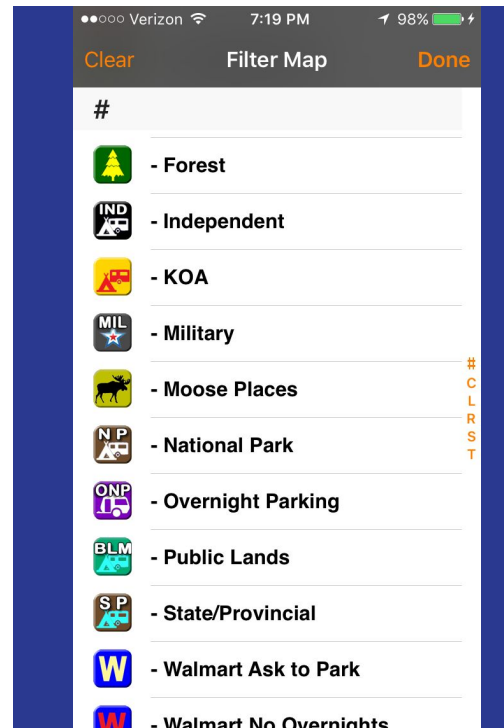
- Tap an item on map to view summary page
- Links at the top get you more information



Tapping one of the POI's on the map will display a short summary and some links to get even more info.

AllStays

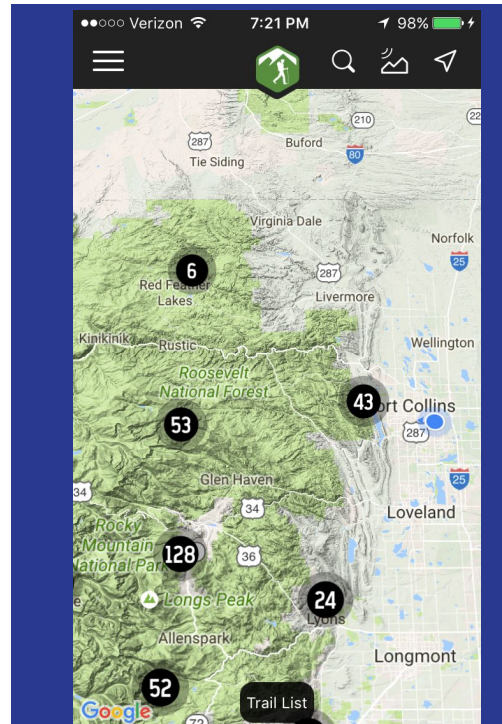
- Filter just the ones you want
- Scroll through a giant list of destination categories



With all of the POI's, the map can get very busy. Scroll through this extensive list of categories and tap just the ones you want to show up, go back to the map and see only the selected categories.

REI Hiking Project

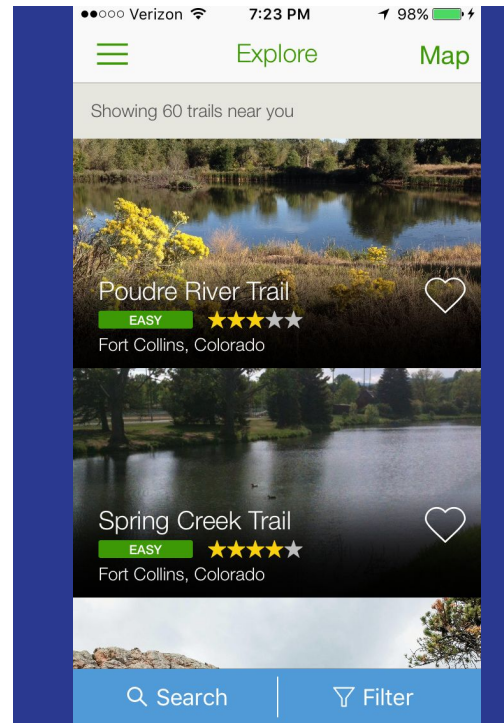
- Trail descriptions, maps and photos
- Free
- <https://www.hikingproject.com/>
- iOS, Android and web
- Large number of trails and growing
- Also provide an app for National Park trails



We are blessed with a large number of walking and hiking trails close by. Maybe you can ‘discover’ a new trail with this app. The numbers in the black circles are the cataloged trails around there. Zoom in to view individual trails, and click on one to get the details. The app is relatively new, but the trail database is growing quickly.

AllTrails

- Trail descriptions, maps and photos
- Free as well as paid advanced features
- <https://www.alltrails.com/>
- List of trails at your location (or selected location)
- Click for description and maps



More trails. You can unlock additional features for a price. View as either a list or as a map. Scroll the map to a location such as RMNP to see the trails around there.

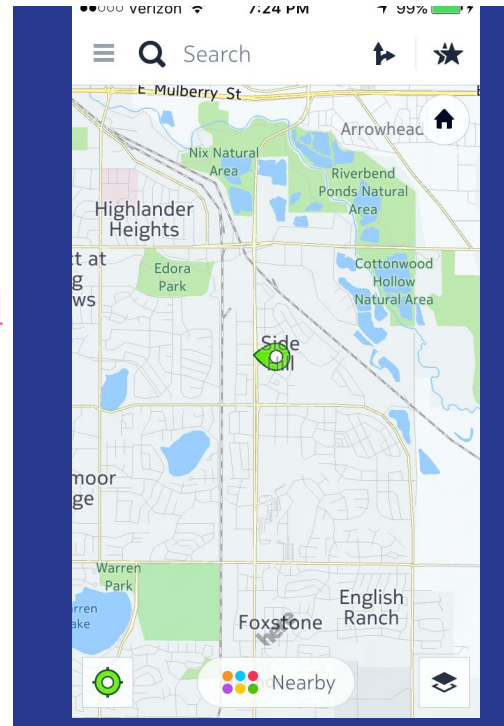
Getting there

- Offline navigation and maps
 - Here (We Go)
- Where am I?
 - Gaia GPS
 - iHike GPS
- What mountain is that?
 - Peak Finder

When you are on the back roads, there is little chance of getting WiFi or cell signal. But, your GPS still works, and if you have downloaded data to your phone, you can still use the maps without a signal. You can transform your phone into a dedicated navigation GPS or a backcountry topo mapping unit. The price is minimal compared to dedicated units.

HERE

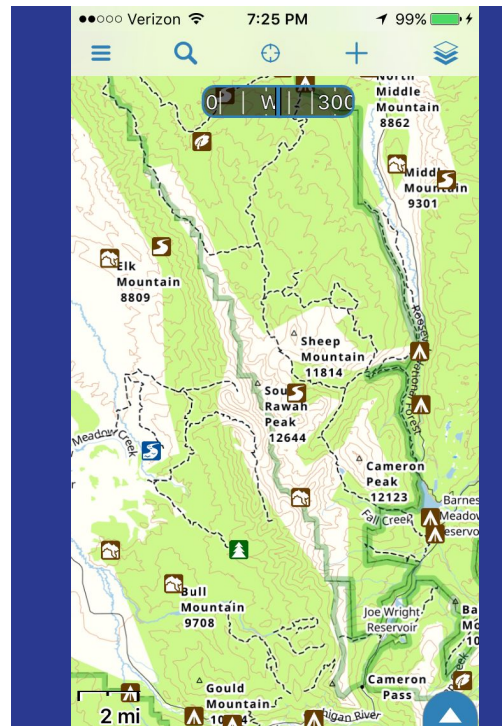
- Offline turn-by-turn navigation
- Free
- <https://here.com/en/products-services/consumer-app/here-wego-app>
- iPhone and Android



Download the latest maps so you can use this navigator even without a cell or WiFi signal. It replaces a dedicated GPS unit, and availability of updated data from the Open Streets project, you should never make a wrong turn.

Gaia Topo

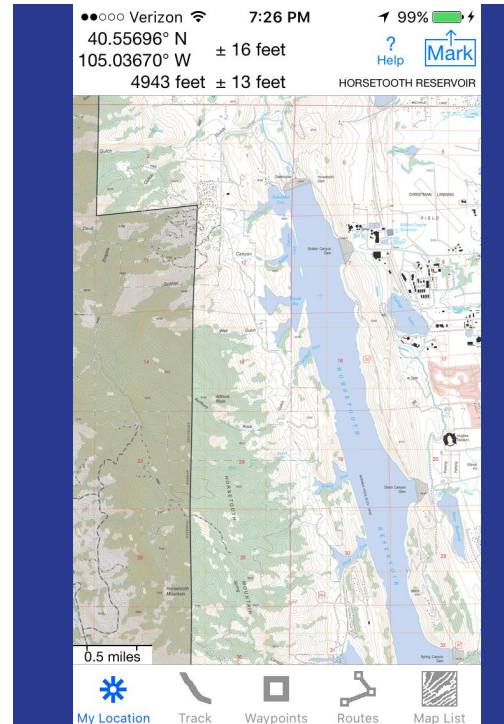
- About \$20
- Free map downloads in multiple formats
- <https://www.gaiagps.com/>
- iPhone and Android
- Plan routes, view distance and elevation profile and record tracks



There are a host of commercial GPS makers that cater to the backcountry hiker. Get that same functionality for the entire country with downloadable topo maps. Be sure to download the maps so you can use it in the backcountry where there is no cell signal. There are many formats, including the standard 24K scanned maps and vector based. Like the commercial GPS counterparts, you can plan routes, view distance and profiles, and record tracks.

iHike Topo

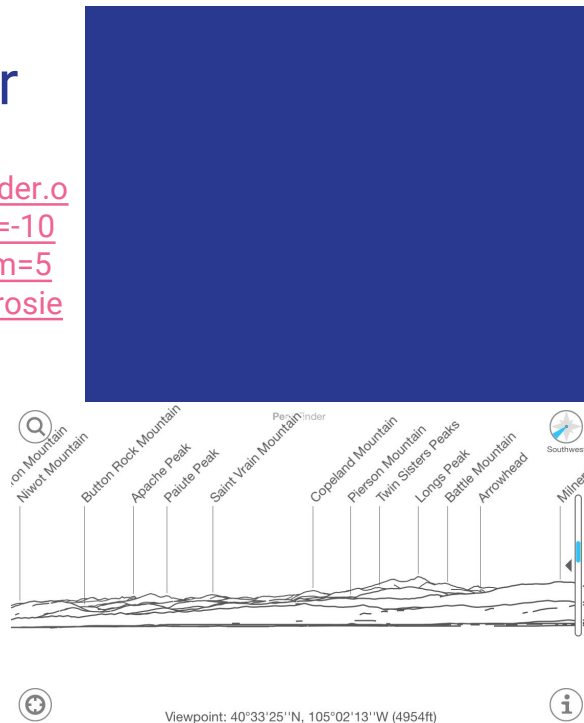
- About \$10
- Free 24K topo downloads
- <https://www.ihikegps.com/>
- Entire US
- iOS



Another topo map app. Uses the standard 24K maps. Download the maps to use offline.

Peak Finder

- About \$5
- <https://www.peakfinder.org/?lat=40.4325&lng=-105.425&azi=158&zoom=5&ele=2809&name=Crosier%20Mountain>
- iPhone, Android
- Free web



Ever wondered what the name of that peak was? This app uses your current location (or any chosen location) to plot known and named mountain peaks. You can use the web version if you don't have a smartphone, and it is free.

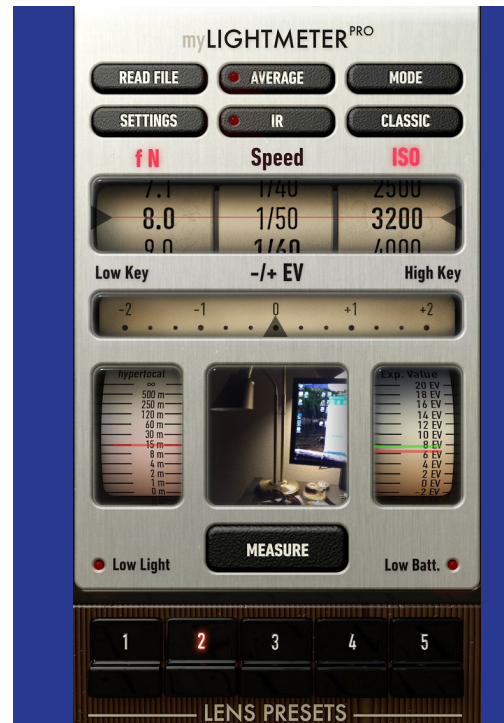
The shoot

- Light Meter
 - My Light Meter
- Exposure calculation
 - PhotoPills
 - LE Calculator
 - Field Tools
 - Set my camera
- Other
 - Releases
 - Nikon Manual Viewer
 - Nikon Camera Control (WMU)
 - Geotag Photo
 - Field Guides (Wildflowers, birds, trees)
 - Sky Guide (star charts)
 - Day One Classic (Journal)
 - Storm (Weather)
 - Creative Live (training)

We have finally arrived on location, hopefully at the optimum time to capture that special moment. Here are some apps for the actual shoot.

My Light Meter

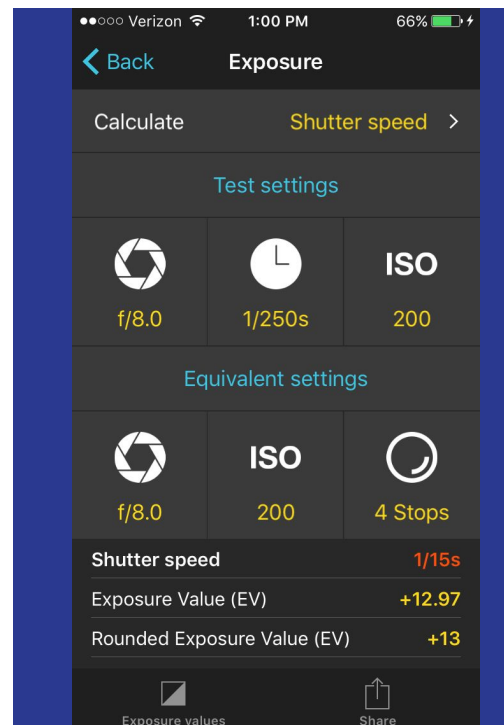
- Free and paid (\$4)
- <https://itunes.apple.com/us/app/mylightmeter-free/id578970826?mt=8>
- Hand held light meter
- Includes spot meter



This is an accurate light meter for the occasion when you need an off-camera light meter. One situation where it might be useful is when you have a strong ND filter on and the camera meter doesn't get a reading.

PhotoPills

- ND exposure compensation
- Adjust exposure settings without ND in first row
- Set ND stops
- Calculates comparable shutter, aperture or ISO
- Change any values in second row to recalculate



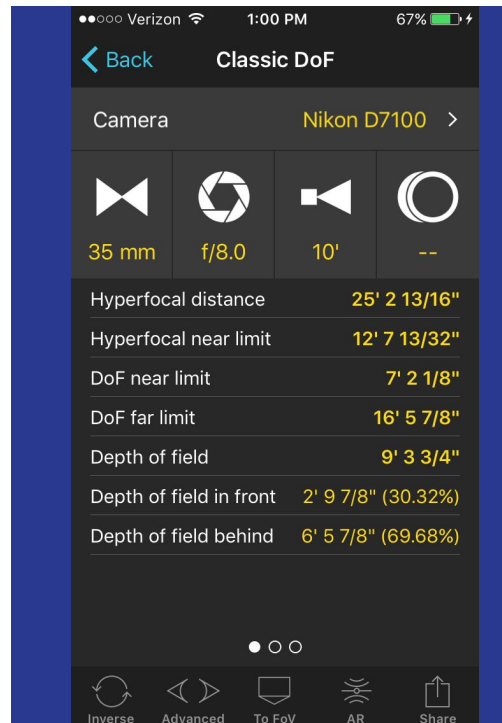
Since camera light meters have trouble with exposure when using a strong neutral density (ND) filter, most photographers will set exposure manually. The light falling on the scene can be measured as an Exposure Value (EV). Exposure in the camera is controlled by adjusting three settings, ISO, shutter speed and aperture. There are many combinations of these three settings that will result in a correct exposure; change them to get the desired effect. If you know the correct exposure for the scene without a filter, then you can use this calculator to get the correct exposure with your ND filter. Adjusting any of the settings shows the compensation in the others to give the same exposure.



Use ND filter to slow shutter speed to get the silky smooth water. Typically, there is too much light falling on the scene to allow a slow enough shutter speed. The ND filter cuts the light allowing slower shutter speed. Smooth out the water with $\frac{1}{4}$ second or longer shutter speed; experiment with shutter speed to get the right amount of smoothing. And, of course, use a tripod.

PhotoPills

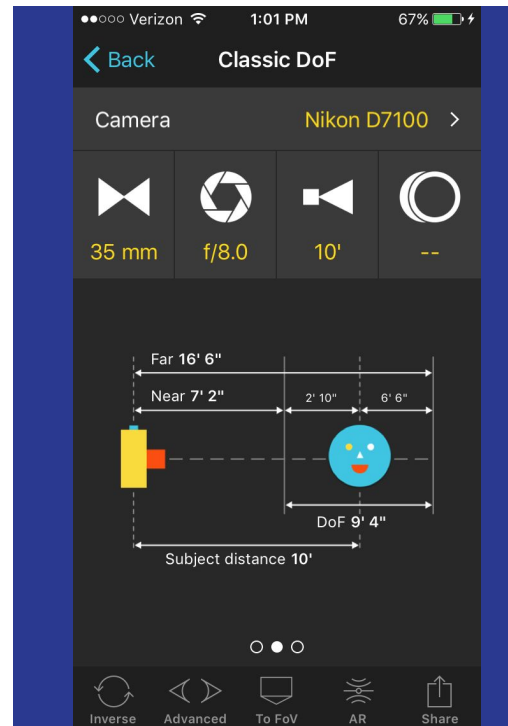
- Depth of field (DOF)
- Set camera, lens, aperture and shot distance
- Calculates near and far limits as well as hyperfocal distance
- Hyperfocal distance is the minimum focus distance with acceptable sharpness at infinity



There are times when you want the photo to be tack sharp front to back, however there are times when you want only the main subject to be sharp, with the foreground and background softly out of focus. Use this calculator to choose the correct focal length and aperture to get the desired effect.

PhotoPills

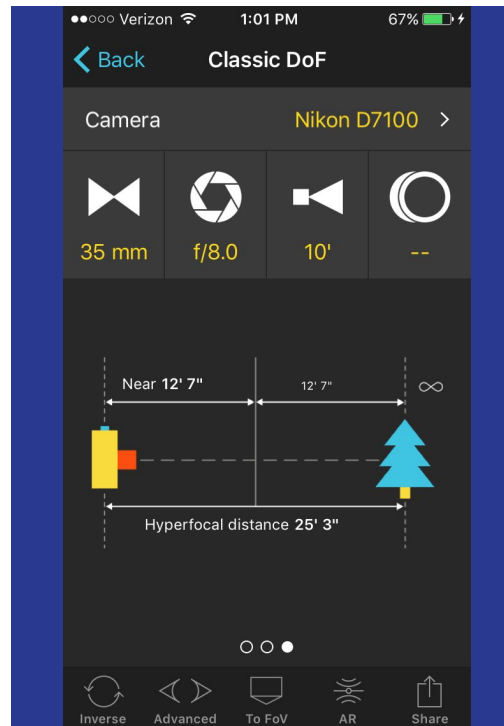
- Visualize DOF



A graphical display of DOF.

PhotoPills

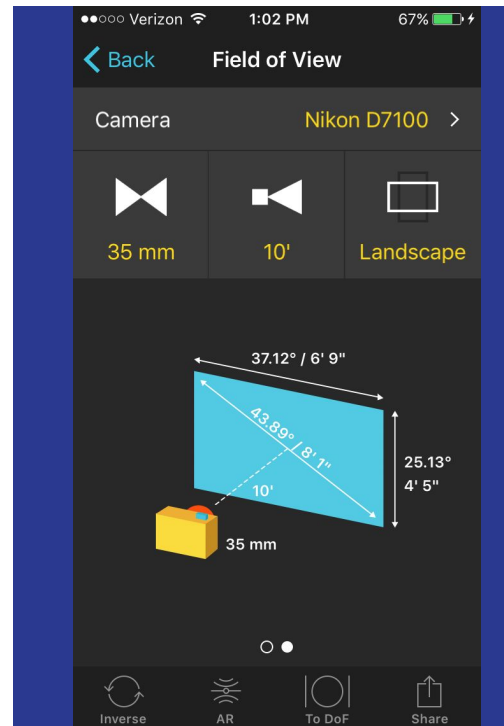
- Visualize Hyperfocal distance



A graphical display of hyperfocal distance.

PhotoPills

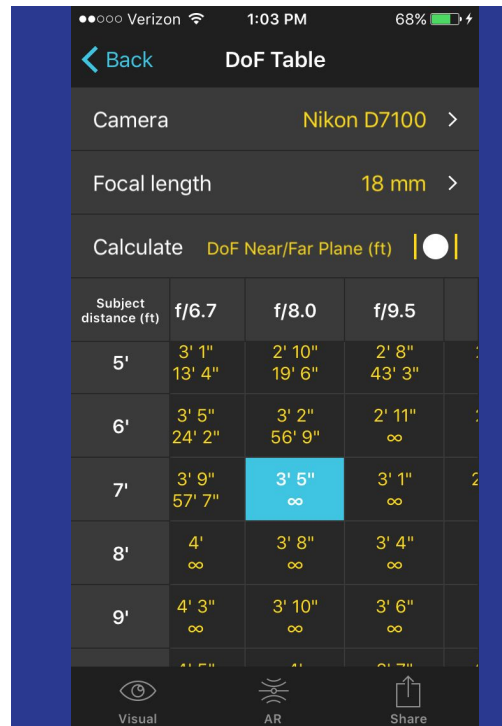
- Field of view at focus distance



Graphical display of the field of view for the given focal length at known distance.

PhotoPills

- Table of near and far focus planes
- Scroll table for aperture and focus distance you desire



DOF in tabular form. Scroll the table to see the effect of distance and aperture.

PhotoPills

- Table of hyperfocal distances
- Specific to camera, lens and aperture

Verizon 1:04 PM 68%

Back Hyperfocal Table

Camera Nikon D7100

Hyperfocal distance (ft)

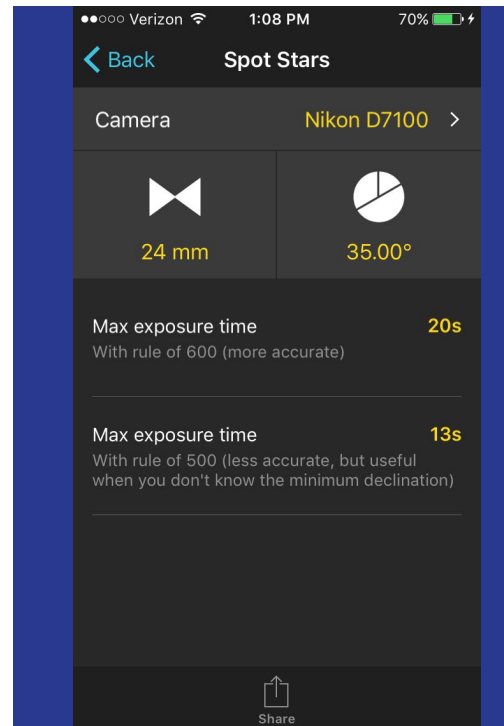
Focal length (mm)	f/6.7	f/8.0	f/9.5
29	20' 7"	17' 4"	14' 7"
30	22' 1"	18' 7"	15' 7"
32	25' 1"	21' 1"	17' 9"
35	30'	25' 3"	21' 3"
40	39' 2"	32' 11"	27' 9"
45	49' 6"	41' 8"	35' 1"
50	61' 2"	51' 5"	43' 2"

Visual AR Share

Hyperfocal distance in tabular form.

PhotoPills

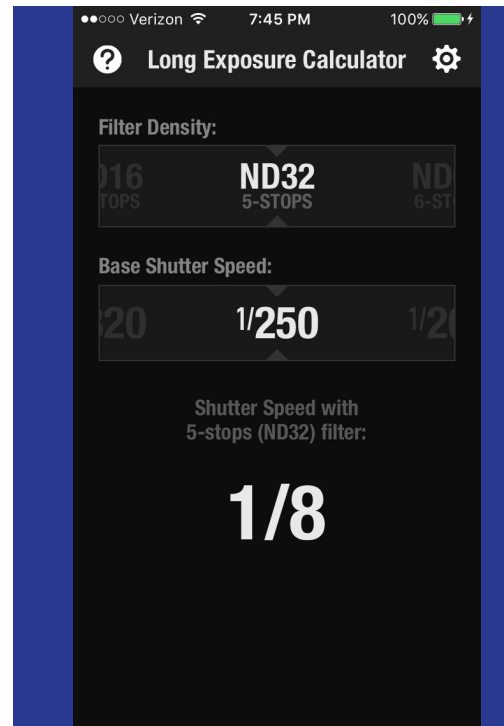
- Maximum exposure to avoid star trails
- Uses rule of thumb: divide 600 (or more conservative 500) by focal length of lens



This is an implementation of the rule of thumb to prevent star trails. Simply divide 600 by the focal length to get the maximum time before star trails start to become evident. Use 500 for a more conservative estimate and less likely to have trails.

LE Calculator

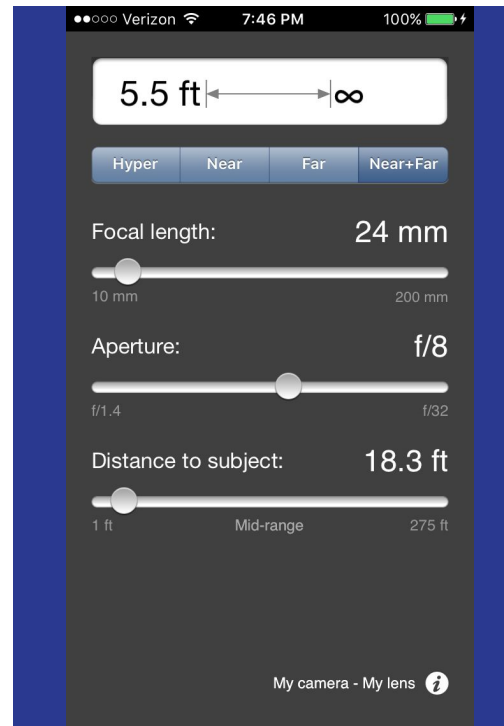
- Long Exposure Calculator
- Free
- <https://itunes.apple.com/us/app/long-exposure-calculator/id694553269?mt=8>
- Reset exposure when using ND filters



Reset your exposure when you use ND filters.

Field Tools

- DOF calculation
- <https://itunes.apple.com/us/app/field-tools/id305817254?mt=8>
- Optimize picture with knowledge of depth of field



A free version of DOF calculation.

Set My Camera

- Free and paid advanced features
- <http://www.setmycamera.com/>
- Another DOF



And yet another version of DOF calculator.

Releases

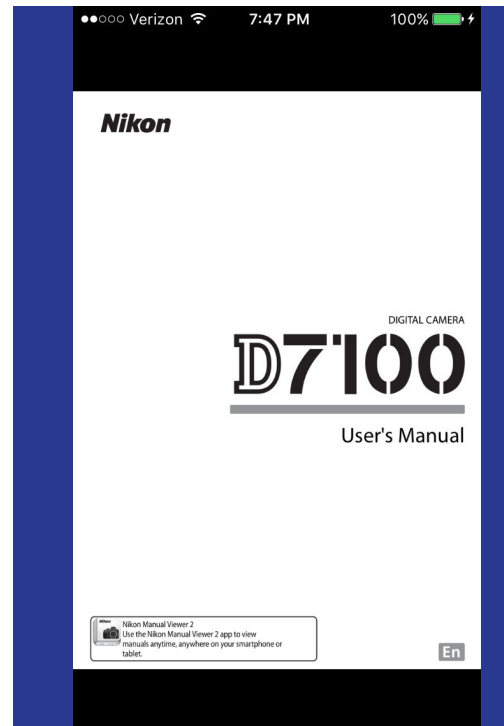
- Model releases
- Free
- <https://itunes.apple.com/us/app/releases-model-property-release/id968090910?mt=8>
- Create and sign model releases in the field

The screenshot shows a mobile application interface for 'Releases'. At the top, the status bar displays 'Verizon', signal strength, Wi-Fi, time '7:46 PM', and 100% battery. The app header has a back arrow, the title 'Releases', and an 'Edit' button. The main content area displays a form for a 'Permission for Photography' release. The form includes contact information for Richard Ernst (2244 Hogwaster Ln, Fair Collins, CO 80525, Ernst.rich@gmail.com) and a detailed legal permission text. Below the text are several input fields: Date (pre-filled with 08/28/2014), Name, Signature, Age, Address, City/State/Zip, and Phone Number. A 'Witness Signature' section follows with fields for Witness Name, Address, and City/State/Zip. At the bottom of the form are two buttons: a blue 'SIGN' button and a green 'SEND' button.

Prepare a model (or property) release template document beforehand, then have the model(s) sign after the shoot, and mail it to the model.

Nikon Manual Viewer

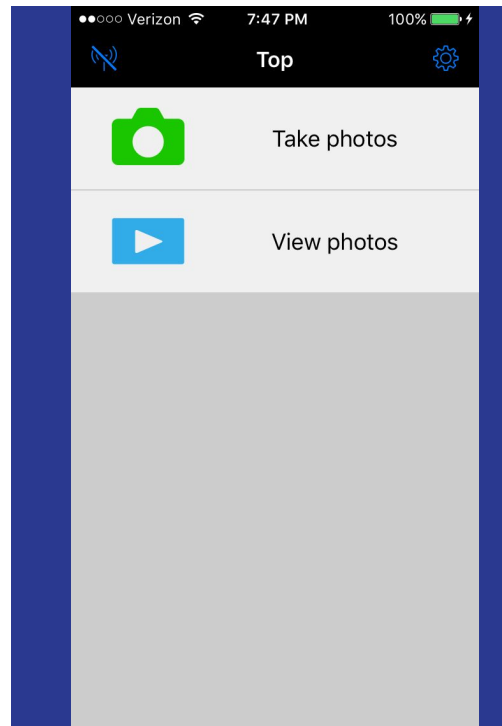
- Free
- <https://itunes.apple.com/us/app/manual-viewer-2/id631171410?mt=8>
- iPhone and Android
- Alternative is to download PDF



Gone are the days of lugging manuals around to look up the functions of your camera or flash. This app is specifically for the Nikon hardware, but similar programs are probably available for other platforms. At the very least, you can download the manual as a PDF. Most phones can read a PDF natively or with an app.

Nikon Camera Control

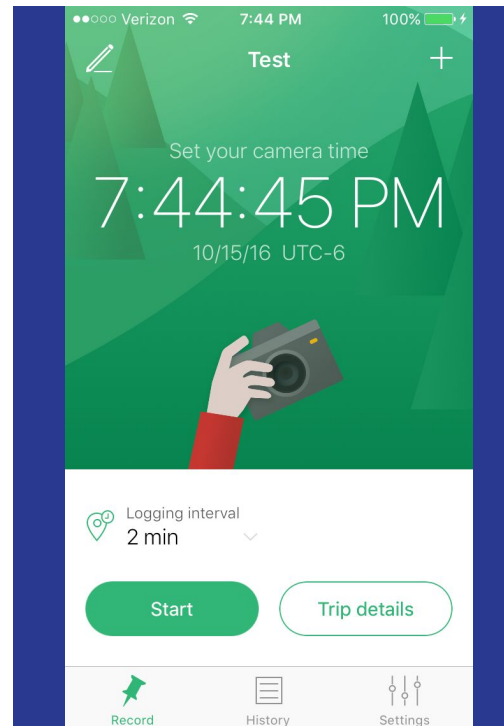
- Free
- Requires WiFi adaptor (WMU) on camera
- <https://itunes.apple.com/us/app/wireless-mobile-utility/id554157010?mt=8>
- Only basic functionality



Not the most feature filled app, but it does give you a wireless connect to the camera. Note that you need the WiFi adaptor for your camera to talk to this app.

Geotag Photo

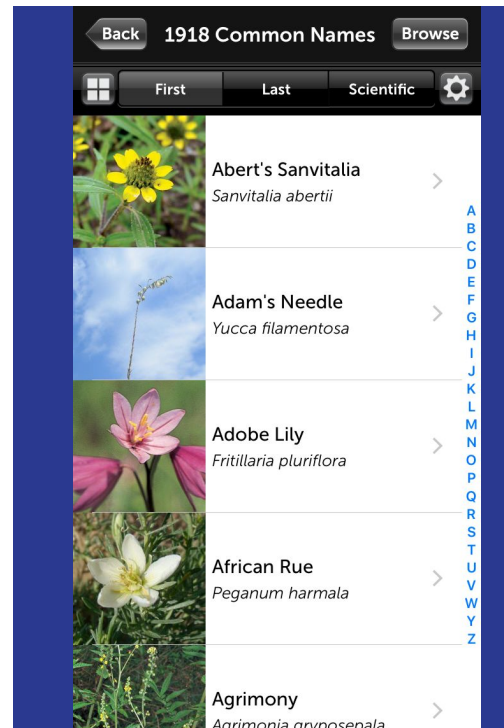
- Add locations to your pictures
- About \$4
- Minimize battery drain
- <http://www.geotagphotos.net/>
- To start new track, hit plus, enter a name, and sync phone and camera time
- Set log interval or manually drop crumb
- Export GPX--can be imported to Lightroom or mapping programs



You don't need to buy yet another gadget for your camera to enable geo-referencing of your photos. You could do it manually by editing the metadata, or you could automate with this process. Simply create a new track in this app, sync the time between the phone and camera, and start recording. Set the logging interval by tapping, then just go about taking photos. To insure you have a location logged, you can manually collect a point at any time. At the end of the shoot, stop logging (you can even continue logging the same track, or create a new track). Using the GPS puts a heavy drain on the battery, so the app has been optimized for long battery life, claiming a 10 hr life. To attach the coordinates to your photos (at your convenience), export the GPX file to your PC. Import your pictures into Lightroom, then go to the map module and open the GPX to merge location data into photos. The app developer also has a dedicated program for the PC to merge into the picture files.

Field Guides

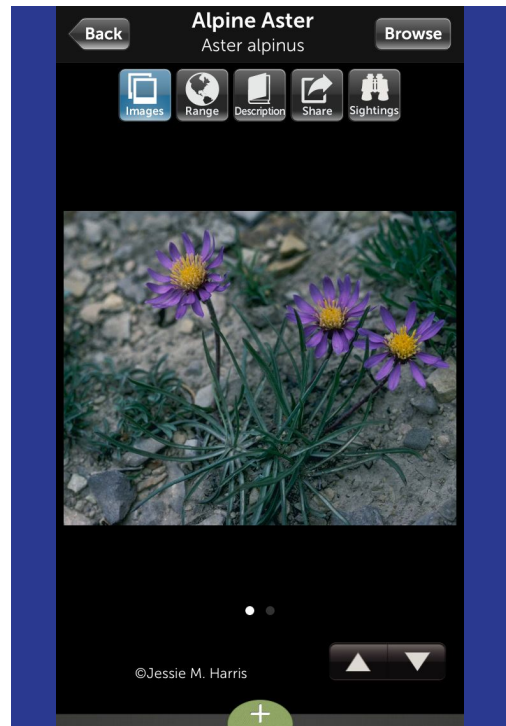
- Audubon combo no longer available
- iBird
- Wildflowers
- <https://itunes.apple.com/US/app/id333227386?mt=8>
- <https://itunes.apple.com/US/app/id297644123?mt=8>
- Navigate to item



The field guide I use is an Audubon app for birds, trees, mammals and wildflowers; unfortunately, it is no longer available. There are lots of comparable apps that can do the same thing, go find one.

Field Guides

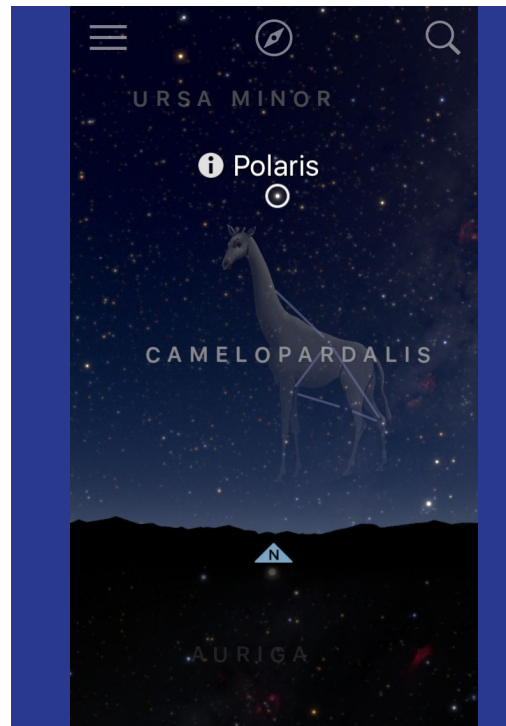
- View info for a flower



Detailed description of flowers along with range maps and photos.

Sky Guide

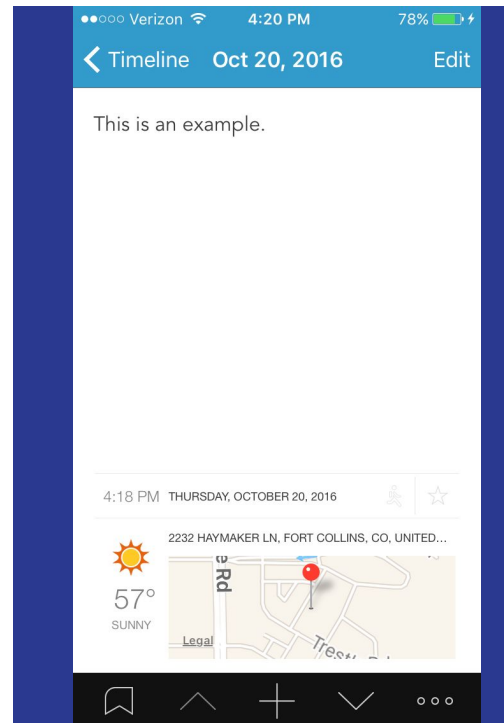
- Star Charts
- About \$3
- <http://www.fifthstarlabs.com/#sky-guide>
- iOS
- View detailed info about stars
- Many alternative apps, both free and paid



View of the heavenly bodies visible at your location and time. Click on a star to view the name; click again on the info button for detailed description. You can manually scroll the chart by swiping up, down, right or left; unlock the compass and the the view rotates to the direction you are pointed.

Day one

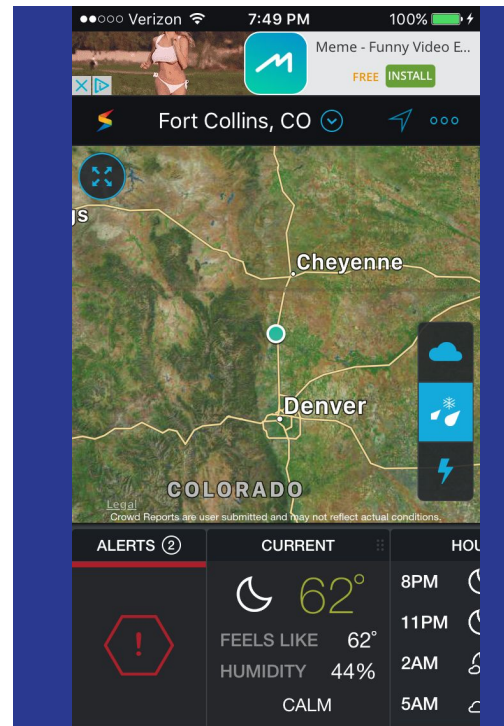
- Keep a journal of your adventures
- About \$5
- <http://dayoneapp.com/>
- iOS
- Automatically grabs time, date, location and weather
- Google 'smartphone journal' to find many alternatives



Make notes about that special place you are taking pictures, or doing just about anything. It will automatically time stamp and grab the coordinates; if you are in cell range, it will even pull up a map and the weather. Type in your notes (connect a bluetooth keyboard if you do a lot of typing) or use the dictation mode. You can even add recordings and photos to the entry.

Storm

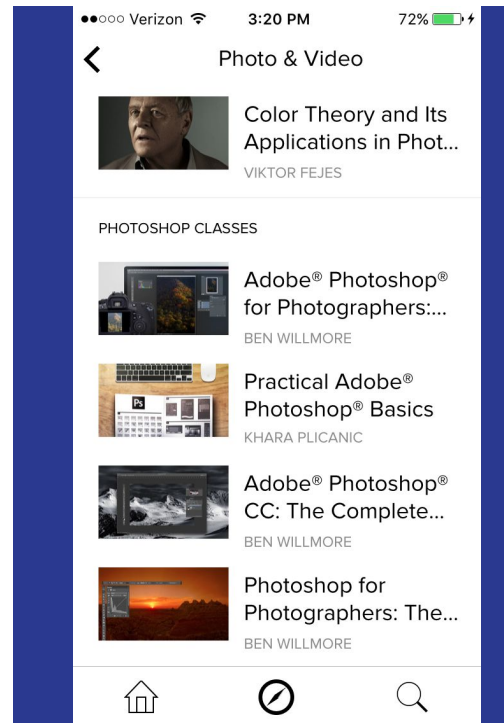
- Weather forecasts
- Free and paid
- iOS (WU app for Android)
- Alerts, forecasts, weather maps and analysis
- <https://www.wunderground.com/micro/storm/>
- On no, looks like a freeze alert



When you are on the road, get the latest weather so you can avoid the storm (or if you are chasing storms, drive into it). Clouds and rain or snow can add that dramatic touch to your photos; but the lightning can kill you. There are so many pages of weather data it will make your head spin.

Creative Live

- Access to Photography training
- iPhone, Web
- Free on-air topics vary
- One free lesson per day
- Purchase courses
- Alternative is to access Lynda.com with Poudre library card



Many different photography workshops and classes. They randomly air courses each day for free. If you miss one, you can purchase access to the entire course so you can view at anytime. Recently released iPhone version so you can choose one free lesson per day. An alternative is to access Lynda.com training for free with your Poudre library card.



Questions and Demo