Tetracam S_link
Installation and Setup

 Tetracam S_link is an Android device app designed to provide a heading to preset geographical waypoints. When a waypoint is reached, S_link can use the device Bluetooth system to trigger a Tetracam ADC or MCA camera equipped with a Bluetooth serial adapter. Along with tracking to waypoints, S_link also enables the following;

- Tetracam units equipped with a paired Bluetooth adapter will be triggered in one of three modes, at waypoint acquisition, manually by a screen button press or at each GPS update period. In every mode, the device GPS position and device pitch and roll angles are included with the trigger command and written into the image metadata.
- The forward looking Android device camera can be triggered in the modes as above. The GPS position is written into the JPEG EXIF header. Images are written to the device Pictures folder in internal storage. This facility is useful in UAV applications. Mount the Android device parallel to the ADC or MCA and you will acquire a visible light image to match the multispectral image.
- The Tetracam camera can be accessed to retrieve and set all the important configuration settings.

Basic setup for S_link involves enabling the GPS location services (only GPS satellites are used), enabling Bluetooth, making a KML waypoint file and pairing your Bluetooth serial adapter to your device.

S_link reads KML files to determine the waypoints to fly to. The simplest way to make a KML is to use Google Earth. Add a path to Google Earth with each point along the path representing a waypoint. Save the path as a KML file and copy it to the Download folder on your device internal storage, (sometimes called SDCARD 0). When you run S_link, you will be able to select the KML file from a list on the KML tab. To pair a new Bluetooth device, power up the device and open the Bluetooth menu in your device Settings. Your phone or tablet will recognize a new device and allow you to pair it. Tetracam Bluetooth adapters (and most others) will pair with the password "1234". Once paired, the new device will appear on the CAMERA tab in S_link.

Once you have a KML file and a paired Bluetooth adapter you need only select them on the KML and CAMERA tabs respectively.

The Settings menu seen at right allows selection of the GPS receiver update rate, the waypoint trigger zone size, the units of measure, voice update interval and type etc. S_link can auto-size the waypoint trigger zone to insure that the aircraft won't fly through it in a GPS update interval. This insures that if the waypoint is acquired, any selected actions (trigger the camera(s)) will take place.
To trigger either or both cameras each time the GPS system updates, check the "Trigger Tetracam on every GPS" box. This is similar to running the camera in its internal continuous capture mode. When you first launch S_link all these settings will be at a default state, editing is purely optional.
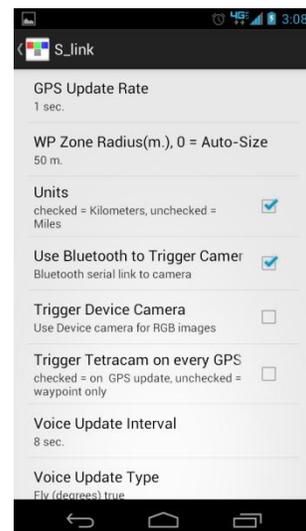
Figure 1

The default start condition for S_link is Bluetooth triggering OFF, device camera triggering OFF. The first start screen will appear like Figure 2. To directly enable Bluetooth or device camera triggering go to the Settings menu at this point.

Press the Start button and S_link will start the GPS service to acquire satellites. When acquired, you will see the location display as in Figure 3. Use the Waypoint + /- buttons to scroll forward and back in the file. Figure 4 shows the screen display with Bluetooth camera triggering enabled. The four button open and close the serial port, Find initiates device discovery, Status calls for camera status and returns the image count and Trig simply triggers the ADC or MCA. The red arrow at the left of the screen points in the direction of the next waypoint. The blue banner at the top indicates the true heading to waypoint. This is also announced in the voice update. Figure 5 shows the waypoint acquired symbol along with the string sent to the camera.

Figure 2
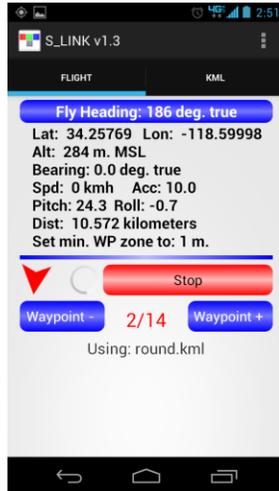
Figure 2

Figure 4

Finally, Figure 6 shows the display at an acquired waypoint with a real time preview from the device camera.

Figure 5
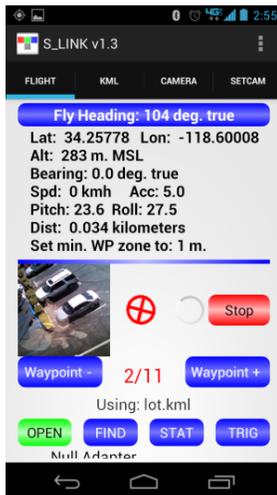
Figure 6

After an image capture sequence, pressing the OFF button will shut down the GPS service and cause S_link to write a log file to the Downloads folder of internal memory (The same folder where KML files are stored). The log file is named S_link.txt. It contains a record of all image capture events along with the geo-location of each. Copy this file to a PC, rename the extension to "kml" and open it in Google Earth. It will display a pushpin marker at each image capture location. Useful for verification of image capture.

S_link also allows direct access to the camera configuration settings. Figure 7 shows the SETCAM tab. Touch any of the menu items to open a floating dialog that lets you set the configuration of that element.
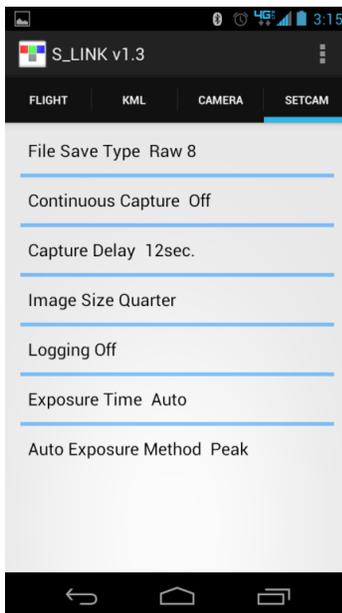
Figure 7

Note that if you choose to trigger the camera using any of the S_link triggering modes the Continuous Capture feature should be set to OFF!

S_link requires the following Android permissions;
  Fine location – GPS satellite data for waypoint tracking.
  Bluetooth and Bluetooth Admin – Bluetooth discovery and socket management for camera access.
  Camera – Device camera access.
  Read Internal Storage – Read KML files.
  Write internal storage – Write JPEG device camera files and S_link log file.

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S_link is provided free of charge. No warranty is granted or implied. Use solely at your own risk. S_link is not qualified for any aspect of flight control or navigation. The sole purpose of this app is to trigger a camera device at a pre-determined location.
S_link is available at https://play.google.com/store/apps/details?id=com.tetracam.slink&hl=en