ATracker

This Android application sends GPS position reports to a [MyTracking](#) map server allowing family, friends, or colleagues to view the device's location on a map in real-time. The application is stable, well-behaved, and can run quietly in the background even if the phone is locked or "sleeping".
The program includes a feature that allows image uploads to the map server. Use the phone to take a snapshot, then upload the image to the server and let the people who are tracking you see what you're seeing.

The following sections will cover installation and use of the **ATracker** software. The last section has some sample images of the mapping server application that will receive the GPS position reports, store the data, and place the tracks on a real-time map. This will give the user a better idea of how the overall system is used.
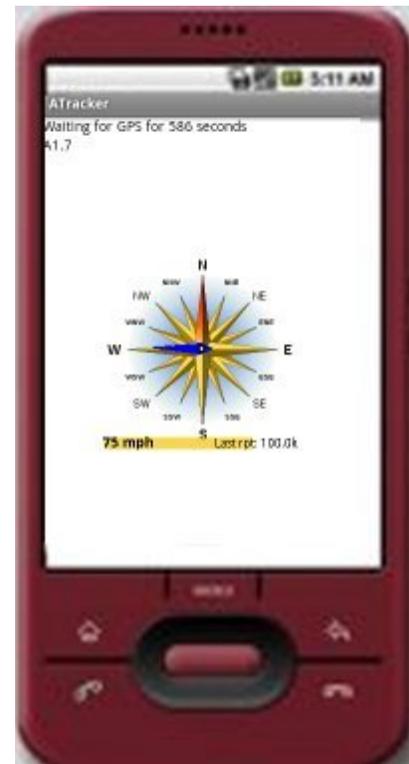
Installation

The Android Market makes this process easy. It is also the best way to keep the application current as you will be notified of any updates. This is the link directly to the download page:
http://market.android.com/details?id=com.jeff.android.atracker
The download is free but you still need a Google account to use the Android Market. If you don't have or don't want to get a Google account, this links directly to the download file on our test server. You must navigate to this URL using your phone:
http://trackingtheworld.dyndns.org/atracker.apk

The QR code above will take you directly to the download file (atracker.apk) on the test server.

Main Menu

The first step after installation is to simply tap the ATracker icon on the phone's home screen. The application will start the GPS receiver and begin to look for GPS satellites. The best place to do this is outside with a clear view of the sky.


The main screen is simple. There is a compass with a blue needle pointing in the direction of travel. Under the compass on the lower-left is your speed. To the right of the speedometer is the distance in meters or kilometers from the last place the phone sent a position report to the server. It will say, for example, **Last Rpt: 3.1k** meaning you are 3.1 kilometers from the last position sent to the map server.

Almost all Android apps use the phones main menu button to access application menus. The location of this button varies from phone to phone. The red arrow in image the above shows the location of the menu button on a G2x. This section will explore each of these 5 menu items: **Config**, **Exit**, **Send Now**, **Waypoints**, and **Send Photo**.

Config

This is the screen where username, password, server address and other parameters are entered. These settings must be configured before the software is used to send actual GPS reports. Attempting to start the GPS before entering and saving these settings will display a message reminding the user to do so.
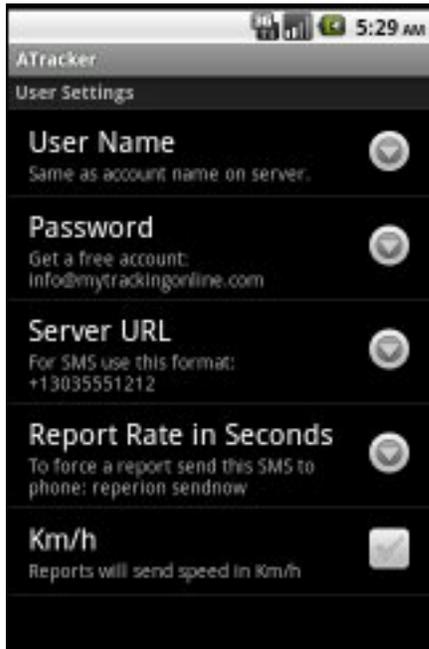
The Config screen

The **User Name** and **Password** are supplied by the map server administrator. The field under the password is the **Server URL** of the map server. **NOTE:** to send reports using SMS, enter the phone number of the GSM modem that will be receiving the reports. Be sure to prefix the phone number with a "+". For example: +13035551212.

Report Rate in Seconds controls the rate at which the device will send GPS reports to the map server. The minimum for this value (the fastest rate) is 30 seconds.

**Km/h**, if checked, will use km and kph for all reports, otherwise miles and mph is used.

To return to the main screen, tap the phones "back" button. Again, all Android phones have this button but it is located in different places and looks a bit different on various phones.

Exit

This closes the ATracker program and shuts off the GPS.

Send Photo

Use this to upload images to the server. After tapping this menu item, you should see a screen containing thumbnail images of all the photos stored on the SD card. Tap one of the photos. This image will be sent to the server and saved. When you open one of the map pages, you should see a small camera icon on the map near where this photo was taken. You must also have a GPS report saved on the server. The time of the GPS report is important. The camera icon and image will only appear if the report time and the time the image was taken are with about 1 hour of each other. The image below demonstrates how the uploaded image is used on the Google map pages. If the GPS report links to one of the uploaded photos, a thumbnail of the photo is displayed when you click or hover over the GPS marker on the map. Clicking the thumbnail will display a full-sized image of the photo.
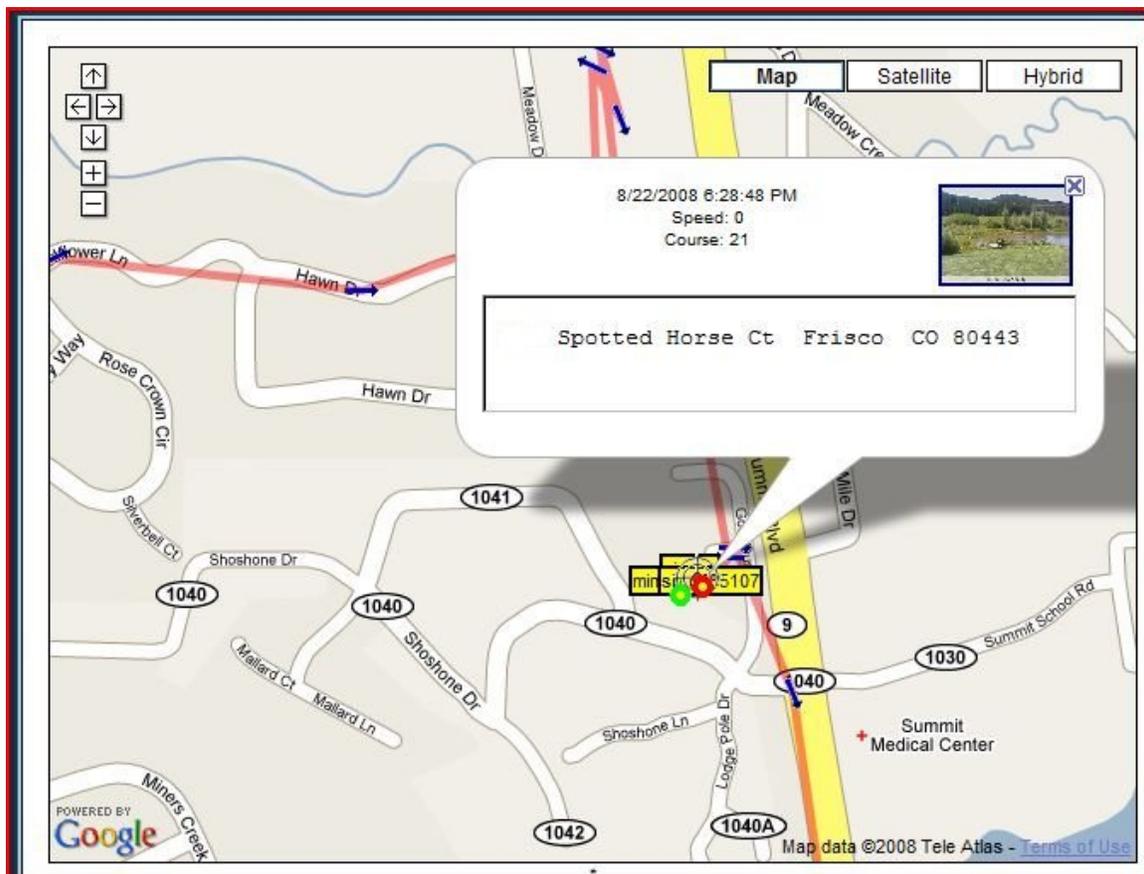
Send Now

Sometimes it is useful to force the phone to send a GPS report without waiting for the normal report rate to count down. **Send Now** ignores the report rate and sends a GPS report to the server immediately.

Waypoints

For you GeoCachers, we have waypoints. Geocaching is searching for and hopefully finding hidden objects left by others. A quick Google search for "geocaching" will pull up some good websites which is where you will get those caches to hunt for (and get outside for a nice hike; maybe loose a few pounds).

Other uses for waypoints include finding a parked car, saving positions of a good fishing spot, locating that pot of gold you buried in the forest while drunk, finding your way home on foot (while drunk), etc.

The screenshot to the right is an example of what will be seen when a waypoint is active. There will now be 2 additional items on the screen: a red needle pointing to the waypoint, and some red text on the top-left of the compass showing the name of the waypoint and the distance to it in meters or kilometers. In our example **cache102: 3.1k** we are 3.1 kilometers away from our waypoint which is located NW of our current position.
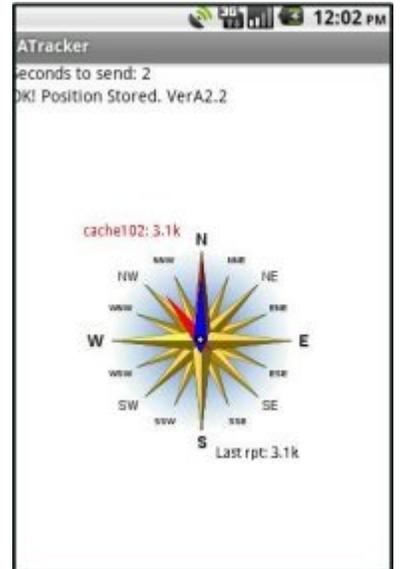
The first step is to click the **Waypoints** menu item. This will bring up a new screen:

The main area of this screen is the list of names of the saved waypoints. We have three in our screenshot, *cache102, car, my mom's house.* Tapping any of the names will populate the three textboxes below the list. In our example, we touched "cache102". The name, latitude, and longitude are now in our textboxes. These boxes are what will activate the waypoint system.

So basically, if there is a name and a valid lat/lon in these boxes, tapping the phone's **back** key will bring us back to the main screen which will now display the waypoint information (the red needle and the red text). The waypoint info will continue to be displayed until these boxes are cleared. Thus, to turn OFF the waypoint info, tap the **Waypoint** menu item to re-open the waypoint screen, tap the **Clear** button, tap the phone's **back** key.

The other 2 buttons are used to save or delete a waypoint. To delete a waypoint, tap the name of the waypoint in the list which will populate the 3 textboxes, then tap **Delete**. Answer Yes or No to the pop-up dialog to complete (or cancel) the deletion.

Use the **Save** button the create new waypoints or to edit an existing waypoint. To edit, tap the name of the waypoint in the list, then change the latitude or longitude values. As long as the name remains the same, the new values will be saved. If the name changes, a new waypoint will be created using the new name.

Let's do a quick walkthrough of creating and using a waypoint. For this exercise, we will be saving the position of our parked car. We drove to the airport and parked in an out-lot where will leave the car for a few weeks. Step out of the car and click the Waypoints menu item. Every time this screen is opened, the 3 textboxes are automatically filled with your current location (*current* is always used for the default name). What we see in the boxes is:

current 38.3267 -104.24487

Since the latitude and longitude are already accurate for our car's location, all we need to do is change the waypoint name from *current* to *car* in the first box. Now tap the **Save** button and go catch the flight.

NOTE: always change the default name. If *current* is displayed in the name box, the waypoint system will not be turned on. It is the same as using the **Clear** button to empty the boxes; either one will turn the waypoint info display off.

Controlling ATracker with SMS

Another way to force ATracker to immediately send a report is to send an SMS (text message) to the phone that is running the ATracker software. The contents of the SMS message must be:
reperion sendnow
The message subject is not important and can be left blank.

A possible use for this feature might be a scenario where you don't want to send regular GPS reports but you may need to locate the phone for some reason (the phone is lost or stolen, locating a child, etc). So enter a high value for the **Report Rate**, 999999 for example. ATracker will run in the background and do nothing until it receives the *reperion sendnow* SMS message at which time it will immediately send a GPS report to the server.

Contact Info

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Please visit our home page for info on the map server application:
http://mytrackingonline.com

The following pages have some screenshots and info on how to use some of the map pages on the map server. These pages change frequently and may be different than these examples.

Map Server Screenshots
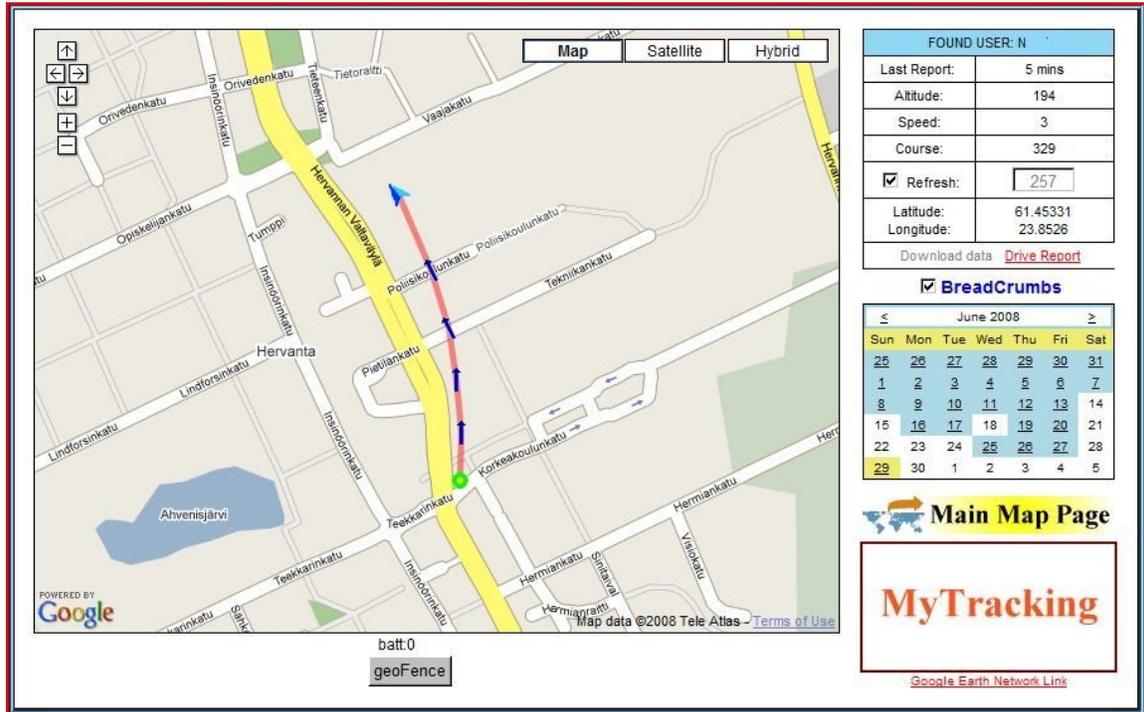
Google map and a breadcrumb trail.

After the phone sends some GPS position reports to the map server, the current position and a "breadCrumb" trail can be accesed with a standard web browser. In the example above, each position report sent to the map server is represented by a directional arrow. Clicking any of the arrow markers will display details about the report including address, time, speed, heading, etc. Tracks from previous days can be viewed by clicking a date on the calendar control. The above example uses Google maps. Several other map choices are available including Virtual Earth, Google Earth, shapefiles, custom gif and jpg images, MapPoint desktop, US Census Tiger map service, and others. The map server will also have map pages designed to be used on smartphones and WAP phones allowing the phone to be tracked from almost anywhere. To view these maps, an account on a compatible map server must be created for the phone.

Be sure to check out the rest of the cool features of these online real-time maps. An example of Google's "**streetView**" and an example of a **geofence** are displayed below.

Google StreetView

Zoom in a bit and make sure the "BreadCrumbs" checkbox is checked. If "steetView" is available for this area, the streets will have a blue shading. Clicking any of these blue streets will open the steetView window below the main map. To use this Google feature, make sure you have the latest Adobe Shockwave plugin installed.

Creating a geoFence
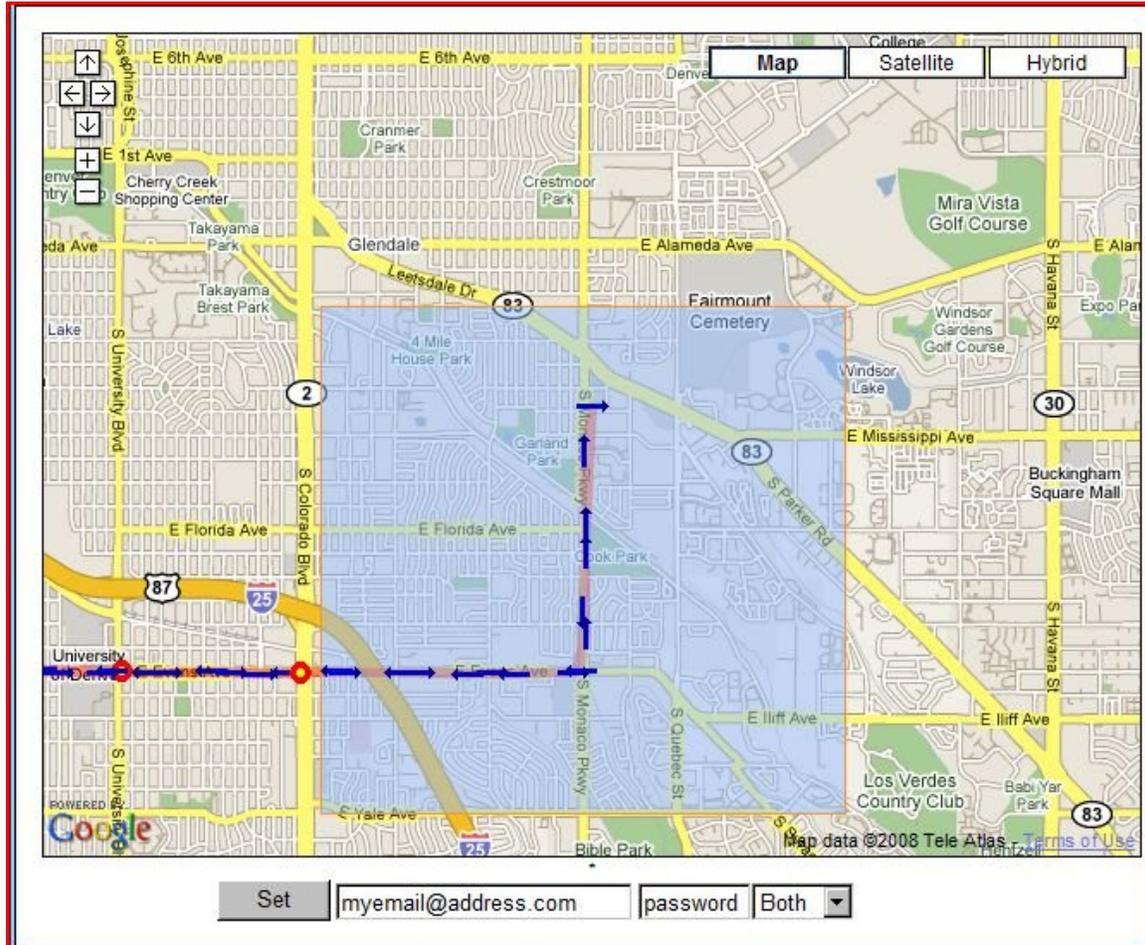
In the above example, we drew a rectangular fence on the map by clicking 2 opposite corners of the rectangle. You can clearly see the fence as the light-blue shaded area. After entering an email address or a cellphone number for an SMS text message, we then enter the password and choose the type of fence we want. The fence types are:

BOTH
> This will trigger an alert if our target ENTERS or LEAVES this fence we created.

EXIT
> This triggers only when the target LEAVES the fence.

ENTER
> This triggers only when the target ENTERS the fence.

1SHOT
This is a special kind of fence. It will trigger an alert if the target ENTERS or LEAVES the fence, but is not saved. Once the fence is violated and an alert is sent, the fence is destroyed.