



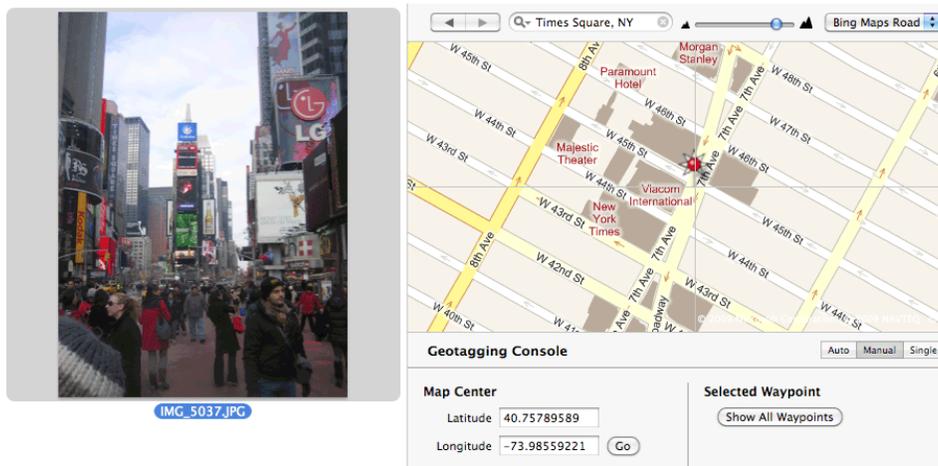
GPS LOCATION DATA

- Global Positioning System (GPS) uses satellites to determine a device's location +/- 50 feet.
- Data can be plotted on a map including date and time.



Modern mobile devices such as smart phones, tablets and portable navigation devices can contain a history of a user's location for many months and sometimes many years depending on the device characteristics. The location data stored in the device memory can originate from many sources with the most common being Global Positioning System (GPS) information.

The GPS data could reside in many different types of data. The GPS location information could be contained in the metadata of a photo or video, from the use of an installed third party application, and from web browsing or a mapping program. So if you have access to the device it's easy to forensically image and triage it to look for location data, user settings, installed applications and metadata fields.





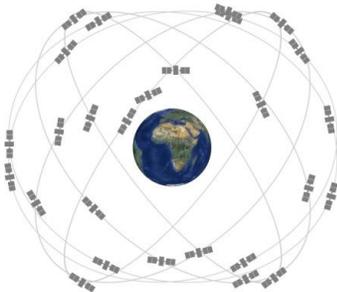
Privacy Settings

The main factor for the recovery of location data from a mobile device will depend on what the user allowed in the settings. In some cases, even with location data disabled, some location data is tracked by third party applications and cellular service providers.

A Mobile device will determine its location often using GPS and sometimes using other services provided by location companies (which usually ask the company to estimate the phone's location based on nearby cell phone towers and/or Wi-Fi networks that the phone can see). Third party apps can also ask the phone for this location information and use it to provide services that are based on location, such as maps that show your position on the map or for marketing purposes.

GPS Data

The location data derived from GPS lets devices anywhere in the world determine their own locations quickly and accurately. GPS works based on analyzing signals from satellites that are operated by the U.S. government as a public service for everyone. The GPS satellites only transmit signals. The satellites do not receive or observe anything from your phone, and the satellites and GPS system operators do not know where any particular user or device is located. Individual GPS receivers inside smart phones calculate their own positions by determining how long it took the radio signals from different satellites to arrive.

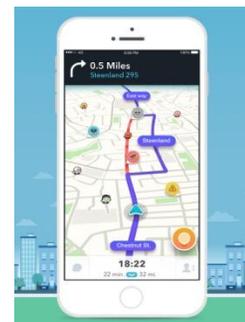


GPS Accuracy

The accuracy of the GPS is exceptional, but there can be some times when it is not correct. The satellite signal can be affected by weather conditions and will default its location back to the last known GPS data point. For example, if the user put their device in airplane mode in New York, then flew to Texas and used the camera without establishing a GPS connection, the location data may show the photos were taken in New York because it defaulted to its last known GPS coordinates.

Third Party Apps

Many of these applications will use the devices location to make the usage of the app simpler, as well as for marketing purposes or notifications. For example, a mapping app needs access to the device location data to place your location on a map and provide route guidance. At the same time, it may alert you to nearby businesses. The location data could be stored in the application database within the





device memory and some will then transmit your location over the network to the service provider.



Geotagging

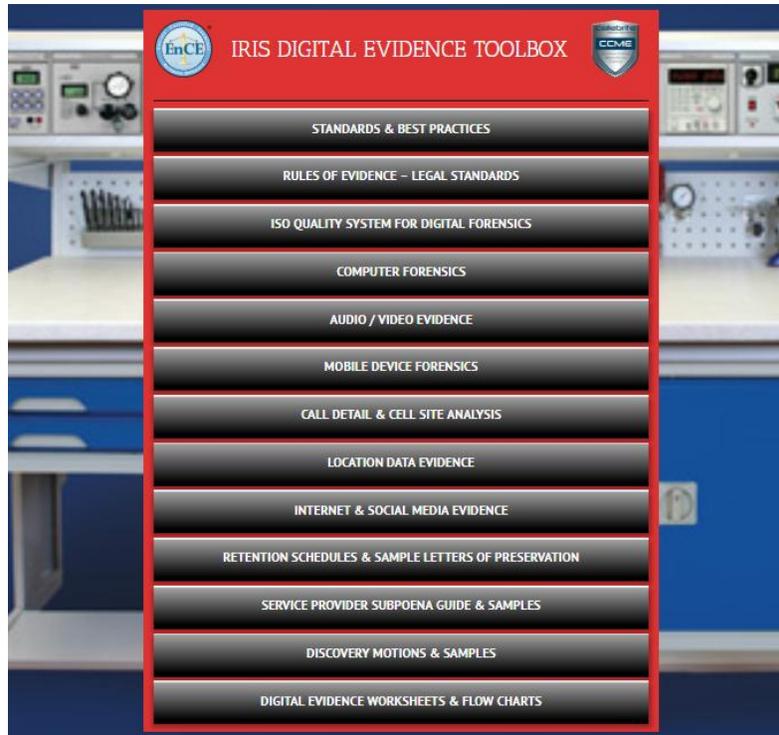
Geotagging is the process of adding location information to a file. With location data services enabled, multimedia (photos and videos) taken by the device can contain GPS based location data stored within the image or video file. The location data from geotagged items can be overlaid onto a map by forensic tools.





DIGITAL EVIDENCE TOOLBOX

For more topics and information on digital evidence, see our Digital Evidence Toolbox at:
<http://www.irisinvestigations.com/wordpress/iris-digital-evidence-toolbox/>



For more information on location evidence, call now and speak with a certified expert. I.R.I.S. LLC is available 24 hours in emergency cases.



WE'RE CERTIFIED.

