

Tools of the Trade**Understanding EXIF data on digital pictures**

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Let's assume that an old friend sends you a (digital) photo that has some really interesting paranormal activity captured. In talking with him (or her), you are 'assured' that this is a legit photo that they personally took themselves several weeks ago at a fairly well known location with a camera you gave him. How do you know that this photo really IS legitimate? How do you know the story behind the photo is correct? Fortunately, there is a way to reasonably confirm the photo details using EXIF data which allows you to examine additional details about the photo that the photographer may not have know and/or remembered correctly, and possibly use these details to help explain the anomalies or even support the claim.

In this digital age, computer files (e.g. digital photo file) not only contain data, but metadata as well. Metadata is essentially 'data about data', and although the digital photo file DOES have Operating System (FileSystem) metadata such as owner name, create/modify/access dates, etc that is associated with the file, there is another type of metadata that is actually embedded IN the photo file that was saved by the camera (or scanner) at the time the image was generated and is called **EX**changeable Image **F**ile format (EXIF). EXIF is an industry association standard and for folks that like details, you can download and review the (148 page) specification at: <http://www.exif.org/specifications.html>. The EXIF standard, like all standards, is a guideline for hardware and software manufactures and is often times open to interpretation, and selective conformance, but generally almost all image related hardware manufactures and software developers *do* support it.

EXIF data can include *static* information about the camera like: Make, model, firmware, fixed lens specs, as well as *dynamic* information about the photo at the *exact* time it was taken such as: Image size, flash settings, GPS location, ISO speed, and much more. The exact data written depend on the camera, but some cameras (especially older ones) may have limited or even no information at all. Even if the camera did write EXIF data, it still may have been stripped off after the fact by various photo editors (e.g. Photoshop), conversion utilities (e.g. shareware PNG to JPG utility), or other file sharing or social websites (e.g. Facebook, Photobucket) for various reasons (e.g. size reduction, security, or privacy). Viewing EXIF data can sometimes be done via the camera's menu screen, but more commonly done after importing, downloading, or transferring those images to a computer. Most import/management/editing software programs have features to display this information, but are named differently. Common names for this EXIF data are: Extended Photo Info, Properties, File Information, Detailed data, etc. EXIF specific software is commonly available for Windows, Mac, and Linux from your favorite *trusted* download website for free (or low cost), as well as the various smartphone download app store sites such as iTunes.

Once you are able to view the EXIF data embedded in a photo, it can be used in many ways as part of the normal data validation process. Confirm that the EXIF data that *is* available matches the claims of the photographer and simply makes sense for the photo it is attached to. Keep in mind that (as described above) this data may not have been generated, may have been stripped, may have been unintentionally changed by photo software, or even intentionally changed to mislead.

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A few sample validation questions to ask yourself:

- Does the GPS location data match the location claimed? If large discrepancies exist, why?
- Does the date/time data match? Keep in mind the camera date may not have been set
- Does the image size (e.g. 1280x960) match the actual image? Photo may have been cropped. If so, why? Is the original available?
- Was the camera flash used to take the photo? A flash may explain some unexpected shadows and/or light anomalies
- Can the Exposure, focal length, or ISO speed help explain anything? Long exposure times can lead to photo blurs.
- If a series of photos are submitted:
 - Are they from the same camera? sequenced correctly?
 - Are they even from the same date / location?

Now that you have another paratech tool in your toolbelt, use it! Knowledge is power.

“The hardest thing of all is to find a black cat in a dark room, especially if there is no cat.” — Confucius

To find out more about EXIF use the following links:

- <http://www.exif.org>
- <http://support.google.com/maps/bin/answer.py?hl=en&answer=18539> (Searching by latitude/longitude)
- <http://www.digicamhelp.com/glossary/exif-data/>
- http://en.wikipedia.org/wiki/Exchangeable_image_file_format

