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Verifying User Generated Content

In the newsroom and classroom
Part 2 - Images and Media

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Part 2

Images and Media

This booklet is a quick guide to using online tools and software to check image and video content. It aims to provide a general overview of both the software tools and critiquing skills needed to assess visual material. It is of particular use to journalists who need to verify information when a story breaks or that has been passed to them by users. We have deliberately kept explanations short and simple, and so strongly advise you to follow the coloured links on the PDF version of this booklet for further information on subjects of interest.

Critical Thinking



Image source: [Flickr](#) - Original Copyright Unknown

Everybody today probably has a camera-enabled phone in his or her pocket. Indeed, the quality of the pictures these devices are capable of is extremely high and, thanks to mobile internet connections, they can be shared easily and quickly. Therefore, taking a picture and sending it to someone else is now a matter of a few clicks. On the other hand, it's also relatively simple to alter these images so that they convey a different message, and not so easy to develop the skills needed to quickly assess whether an image or a video is genuine. However, there are many different online tools to help us work with user generated content.

The picture above is clearly not genuine, you need no specific digital analysis for it. Nevertheless, the alteration is quite accurate since the shadows and lights are consistent with the scene and the perspective and proportions seem fine. Even the flag is placed where it would be if the bridge was real. Unfortunately, it is often not so easy to spot the fakes. For example, think of what can be done today with movies and special effects.

When you receive an image from a source, either reliable or not (there have been cases of famous photographers [altering their pictures](#) for increased dramatic effect or to make them look "cleaner"), you should always start by asking yourself the same question: "Does this image make sense?" There are a number of things that you should check in a picture before attempting any analysis or before considering it genuine.

Indeed, scepticism and practice are extremely useful to develop a good forgery instinct.

Let's see how to make a [first assessment of a picture](#). Keep in mind that the same rules apply to videos too, even though video clips are likely to require a lot more time, skill and resources in order to manipulate them.

Lights and shadows:

- Are they consistent? Do all parts of the image that are supposed to be lit by the sun or other light sources have the same or coherent [exposure](#)? Do all parts of the image feature the same or a coherent [colour tone / balance](#)?
- Are shadows (people, buildings, objects) coherent with light direction in the scene? Is there anything strange that stands out?

Perspective and proportions:

- Checking the main perspective lines of the picture, do you notice anything strange? Does anything appear bigger or smaller than it should, or seem too far away or too close?
- Do shapes appear consistent? Do proportions seem to be correct? (Compare size of known objects to each other).

Image quality:

- Do all quality features of the image appear consistent, natural or unnatural? Here we are talking about the textures, repeating patterns, blurs, [ISO grain](#). For example, an unnatural [repeating pattern](#) might indicate that Photoshop's [clone tool](#) has been (poorly) used.
- Do all colour gradients, colour changes, edges, text, thin lines appear to be natural?
- What is the [resolution](#) of the picture? Very high resolution pictures are less likely to be modified because of the level of skill required for a high-res job. Often, though, high-res pictures are roughly, quickly, modified then resized to smaller resolutions to mask the rough job. In this case, [reverse image search](#) and [ELA](#) (Error Level Analysis) could help us (see later in this document). Furthermore, the average smartphone or digital camera's output of genuine UGC is a high resolution file of more than 6Mp ([Megapixel](#)).

Photographic inconsistencies:

- Does the framing and [depth of field](#) appear natural? For example, a panorama view with shallow depth of field would be suspicious (background blurred to mask something?), as would a close up with little or no depth of field. The latter could indicate that a wider picture has been cropped.
- Does the image appear to be cropped or the result of multiple pictures combined together? This often happens with mobile phones. For example, a square image is

unlikely to be the natural output of a modern smartphone or digital camera since [most used formats](#) are 3:2, 4:3 and 16:9. An image can be genuine but only show a portion of the context, therefore altering our perception of “reality”. All [Instagram](#) photos, for example, are likely to be a crop of a wider picture taken by the smartphone. Also ultra-wide, distorted panorama shots require a lot of attention.

Finally, and most importantly, does the content of the picture make sense using your general knowledge about the topic that is being depicted? Let’s, for example, take a look at the picture below that I found on a blog and let’s see what we can say about it before attempting any digital analysis.



Image source: [Animal Picture Society](#)

Orca (Killer Whale) vs. Shark Picture:

(Analysis using only our general knowledge, before searching for any further information on the internet)

- Do orcas actually fight with great white sharks? I seem to remember something like this has been witnessed in the past but I don’t think there is any photographic evidence. Indeed, this seems to be too close, how can it be technologically plausible to take such an underwater close up of such a fight? I am not convinced.
- Lights and shadows appear inconsistent. The orca features a mainly cold-bluish hue as opposed to the warmer-brownish one of the shark. There are also strange strong blue reflections on the right side of the orca’s body. Despite the orca being lit from above, it casts almost no shadow on the shark, and the shark belly, between pectoral fins and tail, appears to be unnaturally dark (low exposure?).

- Proportions do not seem to be correct. According to this picture the orca and the shark appear to be roughly of the same size. I think orcas are on average larger and heavier than sharks. I can recognise the orca's gender by the dorsal fin but I can't see this one, it seems to be a male, though.
- The light/sun effect on the back of the orca seems to be the typical smooth wave of a pool or calm shallow water, not the open ocean where a fight like this might be expected to take place. Furthermore, the colour of the sea looks strange, like a pool, not the ocean. The fish in the background seems to be a yellow fin tuna... three species like these in one picture? In nature, why would the orca attack another (potentially dangerous) predator with such a prey available? I'm not a marine biologist, but "it doesn't make sense" to me. I would guess an orca might attack a shark to protect its offspring, but otherwise it is unlikely.
- The bubbles and the "sea" seem to be different when it comes to the orca and the shark. Indeed, two giants like these fighting right under the surface should produce a lot more bubbles.
- I see an unnatural pink-magenta reflection over the shark's tail.

My conclusion: this picture is a fake, a quick composite of two or more pictures. It is something made just to convey the message of a possible encounter between an orca and a great white. Time to search for further information.

Searching on Google for "[orca great white shark](#)" already provides a lot of clues, there is no need for a reverse image search. We can recognise this picture straight away both from the "web" and the "image" tabs. This picture seems to have been used as a cover image for an alleged National Geographic documentary made about this topic. The same picture was featured (now removed) even on the [NatGeo Channel](#) website. Nevertheless, it is a photoshop composite, not genuine, and a quick check with Google also confirms my ideas about orcas being [much bigger and heavier](#) even than great whites. Further research indicates that these "encounters" are more common than I'd expected, though.

User Generated Content as well as anything found on social media represents a challenge to the truth and should always be investigated. It is often possible to debunk fakes using personal knowledge, scepticism, and good "visual training". The latter should be practiced by looking at as many pictures as possible with this attitude, and reading how and why they were found to be fakes. Furthermore, you should always bear in mind that an image may be genuine while still [telling a lie](#) (wrong context, wrong caption, etc).

Here is a list of websites that feature some examples to get started with:

- The Hoax Photo Archive - Photo Fakery Throughout History - [The Gallery of Fake Viral Images](#)

- [Is Twitter Wrong?](#) – Excellent blog about UGC media checking
- [Pictures That Lie](#)
- [10 Most Famous Doctored Photos](#)
- 20 Viral Photos That Turned Out To Be Fake - [Video](#)
- [86 Viral Images From 2014 That Were Totally Fake](#)

When general critiquing skills are not enough or when you need to check the content of images and videos for investigation purposes, you can rely on a series of tools. Once again, however, connecting the dots and linking each clue to others you find will be the key to answering the “is it real” and “does it make sense” questions.

Reverse Image Search

A screenshot of the Google "Search by image" interface. It features a title "Search by image" with a close button (X) in the top right. Below the title is the instruction "Search Google with an image instead of text. Try dragging an image here." There are two input options: "Paste image URL" with a small icon, and "Upload an image". Below these is a text input field. To the right of the input field is a blue button labeled "Search by image".

One of the most useful tasks you can perform when you want to seek some information about a picture is a [reverse image search](#). Using our file as a reference, [Google](#) (click on the camera icon) and [TinEye](#) will search the web for possible matches or visually similar images. Remember that some useful browser plugins are available for [Firefox](#) and [Chrome](#) in order to make this process even faster, either using Google's or [TinEye's](#) search engine. Indeed, it is advisable to ensure you check any online image just with the right-click of the mouse.

Reverse image search is also available on tablets and smartphones, sometimes with specific, powerful apps that take advantage of the device's camera, such as [Google Goggles](#).

Even if you already know this tool, it is always worth checking Google's [quick help pages](#) for further tips on how to effectively use this important feature. Also remember that if you want to check for a picture that is already on the internet you can simply copy/paste the url of that picture rather than uploading it from your computer.

Reverse image search will allow you to find out several things:

- The age of the picture on the internet. If there are no matches at all, for example, then the picture is unlikely to be present on the web. If several matches are present, you could find the original (oldest) one, therefore understanding where it comes from and who shared it originally.
- Other possible size / resolutions available. If other sizes are available, both Google and TinEye will provide a link to explore all the options. Once again, the higher the

resolution, the higher the chances of either finding the original picture (and photographer) or performing a successful analysis.

- All the web pages that actually feature a copy of the given picture, allowing you to understand the context around it or to find further relevant elements for your investigation.

Reverse image search also features some drawbacks because of how search engines work. The picture on the right shows the output of a reverse search on a “famous” picture of a little shoe covered in blood allegedly attributed to the [school attack](#) in Peshawar in 2014. Unfortunately this is not correct as the picture [was mis-attributed](#). At the time of writing the Wikipedia page has been corrected (yet it appears in the results), but many other websites were continuing to wrongly report the origin of the shoe.

As you can see, Google provides a guess about the image (mainly based on relevance and popularity, not necessarily accuracy), as well as access to further sizes and lots of information. The last link though, points to the truth, and how the original photographer felt about the mistake and having his picture misused.

Web **Images** News Shopping Maps More ▾ Search tools

About 132 results (0.93 seconds)




Image size:
725 × 390


Find other sizes of this image:
[All sizes](#) - [Small](#) - [Medium](#)

Best guess for this image: [peshawar attack school](#)

[2014 Peshawar school massacre - Wikipedia, the free ...](#)
[en.wikipedia.org/wiki/2014_Peshawar_school_massacre](#) ▾
Jump to [Attack](#) - [Attack](#)[edit]. The attack began at around 10:00 A.M. when seven gunmen, disguised in uniforms of the Pakistani paramilitary force, the ...

[Inside Footage of Attack at Army Public School in Peshawar ...](#)
[www.dailymotion.com/.../x2djw5n_inside-footage-of-attack-at-army-pu...](#) ▾
Dec 28, 2014 - Watch the video «Inside Footage of Attack at Army Public School in Peshawar - PG18+» uploaded by HD Videos on Dailymotion.

[Visually similar images](#) Report images



[Pages that include matching images](#)

[Peshawar attack: Picture of baby's shoe covered in blood is ...](#)
[www.independent.co.uk > News > World](#) ▾
620 × 465 - Dec 17, 2014 - A photographer who took the picture of a bloodied children's shoe that was widely shared on Twitter after the Peshawar school massacre has ...

[BBC News - Israeli photographer 'horrified' at use of bloody ...](#)
[www.bbc.com/news/blogs-trending-30498745](#) ▾
624 × 351 - Dec 17, 2014 - ... after the Taliban's attack on a school in Pakistan - but it's an old photo. ... passed around in connection with the

Reverse image search is a very powerful ally when it comes to checking an image and it should always be performed as a first step in order to gather clues about whether it is worth proceeding with other tools, should the first assessment raise suspicions. In general, when it comes to UGC that has either been submitted by an external source

or taken from a social media profile or website, it is advisable to carry out extra checks before using to avoid errors that could open you or your news organisation up to complaints or ridicule.

Further Reading:

- [Video](#) – How to Use Reverse Image Search in Google Images
- [Reverse Image Search Engines, Apps And Its Uses](#)
- Tutorial: [Similar Image Search](#)
- Storyful Blog – [That’s not Sandy: How to spot a fake image in three easy steps](#)
- [Imagerider](#) – a tool to perform reverse image search also from mobile devices. Also check this [other link](#)

EXIF Data

Most [JPG](#) pictures come with a lot of embedded information, known as [EXIF](#) (Exchangeable Image File Format) data, and it's always worth checking this data, as they might contain precious clues about the picture they belong to and even more. Indeed, depending on how the image was taken (which equipment was used), and how it was managed afterwards (which post-production software, if any, was used), EXIF data may tell us information such as:

- The author/copyright holder of the photo (to be further investigated with the tools described in the other guide)
- Original date, time and location (GPS Coordinates also known as [Geotagging](#)) where the photo was taken
- Which equipment (brand, model) has been used
- Which [lenses](#) have been used
- Photographic information ([Shutter Speed](#), [Exposure](#), [ISO](#), etc)
- Which software was used for post-production
- Original resolution of the picture
- Much more...

Tag Name	Content
---- EXIF ----	
Make	Canon
Model	Canon EOS 350D DIGITAL
Orientation	Horizontal (normal)
XResolution	72
YResolution	72
ResolutionUnit	inches
ModifyDate	2011:06:27 12:26:57
YCbCrPositioning	Co-sited
ExposureTime	1/400
FNumber	14.0
ExposureProgram	Program AE
ISO	400
ExifVersion	0221
DateTimeOriginal	2011:06:27 12:26:57
CreateDate	2011:06:27 12:26:57
ComponentsConfiguration	Y, Cb, Cr, -
ShutterSpeedValue	1/400
ApertureValue	14.0
ExposureCompensation	0
MeteringMode	Multi-segment
Flash	Off, Did not fire
FocalLength	55.0 mm
ColorSpace	sRGB
ExifImageWidth	2496
ExifImageHeight	1664
FocalPlaneResolutionUnit	inches
CustomRendered	Normal
ExposureMode	Auto
WhiteBalance	Auto
SceneCaptureType	Standard
Compression	JPEG (old-style)
XResolution	72
YResolution	72
ResolutionUnit	inches

...or much less than this. There is no given rule, since EXIF data can be freely edited with widely available software. They can be modified or erased. For example, most social networks (Facebook, Twitter) strip EXIF data from pictures uploaded to their servers. Therefore, images obtained from social media are unlikely to contain important information for verification (Flickr is an exception, since it's a digital photography social media and EXIF data might be considered useful for learning purposes).

There are a number of tools available, both online and offline, that allow you to read EXIF data. Basic data are easily accessible both on Windows and Mac computers simply by right-clicking on the name of the file and choosing either "Properties" or "Get Info". A more specific and widely used online tool is [Jeffrey's Exif Viewer](#) and specific browser extensions are available for both [Firefox](#) and [Chrome](#). Needless to say, this is another

tool/extension that should be installed in the browser of any journalist. Most photo-retouching software allow the management of EXIF data (Photoshop, Gimp) and there are useful file management utilities that should be taken into consideration if you need to work with many files locally. Among these, [XnView](#) and [FastStone Image Viewer](#) are recommended and are free of charge.

Why are EXIF data of interest? Other than the information stated in the EXIF data (location, author, etc), it is also important to consider whether they “make sense” or not. A good understanding of [digital photography](#) would be advantageous in this case. Here are few examples:

- If the EXIF data show that the picture was taken with a [wide lens](#) (E.g: 18mm) but the picture is a close-up, it was probably cropped and lots of the context [might have been left out](#).
- If the EXIF data show that Photoshop or other post-production software has been used, we might suspect that the image has been altered in many different ways. Genuine UGC are unlikely to need post-production, it should be given raw from the equipment (often a smartphone or tablet). If so, EXIF data might contain the exact brand and model name.
- If the EXIF data show that the [picture quality](#) was originally high (for example, quick shutter times and [low ISO](#) meaning good light at the time the shot was taken) and the image is grainy or low quality, you’re probably not seeing the real picture. On the other hand, a low quality, grainy picture might be confirmed as genuine in EXIF data that shows long exposure time and / or high ISO.

Generally speaking, any inconsistency between the actual picture and the EXIF data it contains should arouse suspicion. A total lack of EXIF data should also be considered suspicious and would probably require further analysis.

Further Reading:

- (EXIF) Tutorial: [Metadata Analysis](#)

ELA Analysis

A more advanced tool for the analysis of pictures is ELA (Error Level Analysis). ELA is specifically designed for **JPG** images, and reveals differences in the **compression level** of an image, allowing detection of possible areas where it has been digitally modified. The most useful website that offers a comprehensive range of tools for image analysis including ELA is fotoforensics.com.

Submit a JPEG or PNG picture for Forensic Analysis

Image URL:

or

Upload File: No file selected.

See the [FAQ](#) for [submission guidelines](#). See the [tutorials](#) for analysis instructions.

Unique images: 820,141
Banned users: 3,055
Statistics last updated 32 minutes ago

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ELA requires a lot of practice in order to be able to use it effectively for image analysis. Fotoforensics.com offers an excellent online **tutorial** that explains what to look for, the algorithm used, how to perform the analysis as well as the caveats of this technique. An interesting **case study** is also available for further basic training. Also take a look at the **common mistakes** page.

Once you upload an image (or paste its url in the field) and click either of the upload buttons, Fotoforensics.com will show the output of the analysis (See **example** in the following page). On the left, a simple menu allows you to access further information, such as a metadata list (EXIF data) or a reverse image search (click on the “lens” icon).

By clicking on the ELA preview output it is possible to see the full-size image, which is useful in cases involving high-resolution pictures. It is also possible to save the full-size output or to save and share a link to the actual analysis page. Indeed, if you don’t have

[Upload](#)
[Tutorials](#)
[History](#)

FotoForensics

Analysis:

- Digest
- ELA**
- JPEG %
- Metadata
- Original










URL to this page: [\[Direct Link\]](#)

View: [\[Uploaded Source Image\]](#)

Share:     

What does this picture mean? See the [tutorials](#) for an explanation.

a lot of experience assessing this kind of procedure, it might be helpful to share it to ask for advice.

There are other websites that offer ELA. Each one of them implemented the algorithm for the analysis in different ways, therefore they tend to produce results that might be sometimes easier (or more difficult) to assess.

- [Imageforensics.org](https://imageforensics.org), is a powerful website that offers ELA, EXIF extraction, Geotagging and much more, it is based on the [Ghiro](#) image forensics project. It tends to produce darker, less contrasted ELA pictures.

- [Image Error Level Analyser](#), is an amateur project based on the work of Fotoforensics' author Neal Krawets. It features a customizable ELA output that might lead to interesting results.

Another useful tool that provides very detailed textual information about image tampering is [JPEGSnoop](#). This free software for Windows offers many possibilities when investigating the source of a picture. First of all, it supports more formats than JPG alone, can "guess" [whether and image was edited](#) and is also capable of "guessing" what digital camera or software was likely to have been used to generate the image. Generally speaking, image forensic analysis requires training, yet the availability of different free tools allow any professional interested in the topic to take advantage of these techniques.

Further Reading:

- Take the [ELA challenges](#): several interactive ELA tutorials / tests, increasingly more difficult.
- [Looks photoshopped \(about image forensics\)](#)
- Photo Forensics: [Detect Photoshop Manipulation with Error Level Analysis](#)
- [Leading the Eyewitness: Digital Image Forensics in a Megapixel World](#)
- [2 Free FBI, CSI and CIA Software To Analyze Photoshopped Photos](#)
- [Forensic analysis: Is the Rob Ford photo real?](#)

Location

When verifying images (and videos) you definitely want to know, as accurately as possible, where they were taken. Indeed, if you have one picture, you only have one point of view. Finding the location where that picture was taken might enable you to discover a lot more information and verify whether the claims associated with it are true. The same applies to videos, even though in this case the presence of an audio track and motion (providing many reference points) makes the research process somehow easier.

When it comes to pictures, you mainly have two possibilities. Either you find location information embedded within the picture, such as GPS coordinates ([Geotagging](#)) or a name in the EXIF data, or these are missing. If the former is the case, you should be able to open Google Maps and [directly go](#) to the given location, and find the exact spot where the picture was taken, for example using Google Street View.



Image source: Facebook

You have to keep in mind that most people use their smartphones with GPS functions turned on, so genuine UGC has a good chance of being easily geolocated with the information embedded within the media files. Sometimes, though, GPS is switched off or the information has been stripped away by photo retouching software (or app) or by social media sites (such as Facebook). In some cases, GPS information can even [be faked](#). In this case, a reverse image search is a good starting point in order to narrow down the search or to find relevant / related media that could be geolocated more easily. Furthermore, many social media sites allow a person to specify where a picture or video was taken ([Twitter, for example](#)), but this kind of geolocation might be inaccurate, deliberately false or very broad (e.g. “New Zealand”).

If you do not have a starting point or if you want to check a claim (someone might provide you with an interesting picture and say it was taken somewhere), the best thing to do is to find reference points to compare with satellite imagery (remember to also check Bing Maps) and geolocated photographs (check [Panoramio](#)). You should do the following:

- Check all other available information stored in EXIF data (e.g: If you are lucky, a specific camera model might be sold only in a certain region of the world or if a date and time are present, then maybe a time zone is also).
- Carry out a reverse image search to see if either Google or TinEye find something relevant.
- Look closely at the image – notice people’s clothing, street signs, lettering on buildings, street signs, car registration plates, billboards, etc. You can use [Google Translate](#) or [free-ocr.com](#) for generic online translations.
- Look for a distinctive streetscape/landscape such as a mountain range, line of trees, cliffs, rivers, etc. Remember to use Google Map/Earth’s [tilt view](#).
- Notice landmarks and buildings such as churches, minarets, stadiums, bridges, etc.
- Use Google Street View or Google Maps’ “Photos” function to check if geolocated photographs match the image/video location, and use Google Earth to examine older images/videos of the same area (see the other guide).
- You can use [Wikimapia](#) to identify landmarks.
- You can check weather conditions such as sunlight or shadows to find an approximate time of day (if not included in EXIF data) and as a further reference to guess, for example, the height of buildings, trees, objects.
- You can use [Wolfram Alpha](#) to search weather reports at a specific time and place (see next chapter).

For example, check this “[famous](#)” photo above, try to find the exact spot where it was taken. You can find [here](#) the highest resolution available (reverse image search for this, in order to see more details) and you can Google to find the location of the school in Peshawar. Everything else should be a combination of Google Maps or, more likely [in this case](#), Bing Maps. (See previous guide).

As previously mentioned, when it comes to videos things could get a little bit easier. In order to identify the location of a UGC footage we should check (in addition to what we said about still pictures):

- The language(s) spoken in the video. Check if accents and dialects match up with the geographical location. Whenever possible, ask someone who is familiar with or a native speaker of that language.

- If the video was uploaded to social media (Youtube, Vimeo), does the video's description provide extra information? What about the comments? Who is commenting and which language do they speak?
- Does the uploader write in slang or a dialect that is identifiable in the video's narration?
- Apply social media verification tools (see previous guide) to the account. In particular,
 - If videos on the account use a logo, is this logo consistent across the videos? Does it match the avatar on the Youtube or Vimeo account? Does it match anything else on internet (Website, blog)?
 - Check previous footage uploaded by the same person, does the uploader "scrape" videos from news organizations and other Youtube accounts, or does he upload original contents?

Further Reading:

- Geolocating the [Walter Scott Shooting](#)
- Citizen Evidence Lab – GeoGuessr Game: [Train your geo-locating skills](#)

Wolfram Alpha and Pictures / Media

Wolfram Alpha, the computational search engine we looked at in the first guide, can be very useful when verifying media content. Indeed, many of the things you see in videos or images can be checked. For example, what was weather like in the place and at the time the media was allegedly shot.

Let's say that you have, for example, this picture of London during a night-time storm and let's also say that the source of the picture claims it was taken during the night of July 17th, 2014. How do you verify such an information? You can ask Wolfram Alpha [what was the weather like in London](#) on that day.



Image source: [The Independent](#)

As you can see in the following page, WA will compile a report based on the weather stations closest to the location mentioned. This report clearly shows that the picture / claim is correct, since that night / early morning, rain and storm conditions were reported, together with high humidity. All data are consistent and the picture appears to be real. (Picture taken from [this article](#) on Mirror.co.uk's website).

As is clear, a number of free tools are available to verify the content of images and videos. Indeed, other than trying to geo-reference the pictures or looking for recognisable buildings and details, you can check the weather as it appears in the media. It is important to notice that Wolfram Alpha gathers data from open weather stations and the accuracy of the information depends on what data can be pulled from those stations. For example, when searching for Auckland, you can see that hourly precipitation rates are not automatically available [for that same date](#) (July 18th, 2014). However, more recent dates provide more accurate information. For dates that are no longer than 30 days in the past, almost all data are available for Auckland and other cities and towns around New Zealand. Should WA have problems retrieving the information, it is possible to check MetService's website, as it provides [a basic historic graph](#) as well.

weather	London
	Friday, July 18, 2014

Recorded weather for London:

Show non-metric

More

time range	day of Friday, July 18, 2014
temperature	(18 to 31) °C (average: 24 °C)
conditions	rain, thunderstorm, clear
relative humidity	(35 to 100)% (average: 66%)
wind speed	(2 to 9) m/s (average: 5 m/s)

Units »

Weather history:

Day ▼

Show non-metric

Less

Temperature:



low: 18 °C

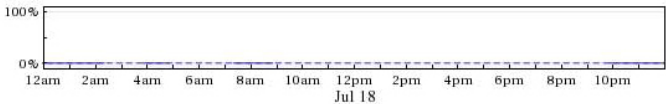
Fri, Jul 18, 3:15am

average: 24 °C

high: 31 °C

Fri, Jul 18, 1:45pm, ...

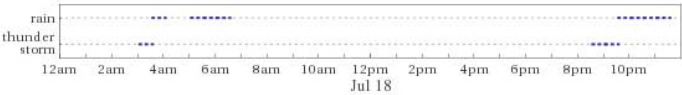
Cloud cover:



clear: 77.3% (8.5 hours)

overcast: 0% (0 minutes)

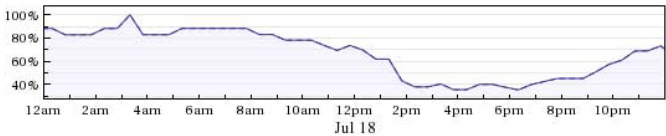
Conditions:



rain: 36.4% (4 hours)

thunderstorm: 13.6% (1.5 hours)

Humidity:



Videos

Other than trying to find the date, time and possible author of a video, you should also try to assess what you have in order to determine whether it has been in any way modified.

We have already mentioned that genuine UGC is usually uploaded or shared straight away. The complicating factor is that, even in a short period of time, it is possible to digitally alter average length footage of a couple of minutes. Indeed, modern post-production software such as [Adobe After Effects](#) and [Apple Final Cut Pro](#), running on powerful computers, allows specialists to edit, cut and alter a video in less than one hour.

Even if some enhancements are quite acceptable within the journalism field (colour or contrast correction, exposure correction etc.), other changes might lead (either intentionally or not) to misinformation. Video editing, for example, is problematic on UGC videos, as if done well edits might be almost invisible and result in misinformation.



Image source: [The Daily Beast](#)

Further, [camera tracking](#) techniques allow, for example, the changing of signs or text appearing in a video in a very effective way, and [green screen](#) techniques can be easily implemented even at amateur level and lead to the manipulation of content. Furthermore, [compositing](#) and more advanced digital special effects can easily alter the meaning of a video, for example by removing or adding a person or objects from the frame.

In general, when assessing a video, you should take into consideration everything we said about images and critical assessment. In particular, shadows are quite difficult to match and are often an indicator of manipulation (see further readings). Furthermore, you should:

- Perform an extensive search, check for references (e.g. using a google reverse image search of a thumbnail of the video) in order to verify whether the same footage has appeared in the past. Check [this video](#) showing a missile launch in January 2013 that is actually a video of [this event](#) of July 2012.

- If video was uploaded on a social media channel, are the videos on this account of a consistent quality? (On Youtube go to Settings and then Quality to determine the best quality available). Do they appear to be shot by the same device? Most smartphones / tablets / cameras / devices today allow the shooting of [Full HD](#) videos. If quality is lower then it's probably not the original file.
- Do video descriptions have file extensions such as .AVI or .MP4 in the video title? This can indicate the video was uploaded directly from a mobile device. However, keep in mind that good video editing apps are available to manipulate footage within the smartphone / tablet before uploading it. Also, if the description of a Youtube video reads something like "Uploaded via Youtube Capture" it may indicate the video was filmed with a smartphone.
- While trying to verify the date and time of footage, keep in mind that Youtube date stamps its videos using [Pacific Standard Time](#) from the moment the upload begins.
- Also remember that Wolfram Alpha can be used to help check the date and time of a video, and to verify weather reports with what can be seen in the video (also sunrise / sunset time etc.).

Further reading:

- Reuters – [Analyst says video of Japanese hostages is manipulated](#)
- Video – [ISIS beheading video in Libya? Experts say the video is fake](#)
- An example of a [Youtube video](#) where a young amateur VFX artist adds a flying spaceship to the footage taken with his mobile phone. Skip to the final seconds to see the finished clip.
- What journalists need to know [about digital video editing](#)
- [BBC admits using digital fakery to spice up shots of Chilean volcano erupting](#) – manipulation in a documentary

Further Readings and Tools

- Citizen Evidence Lab - [Category Archives: Case Studies](#)
- Citizen Evidence Lab – Citizen Video Assessment – [Exercise 1](#)
- [Imagewiki](#) - The world's photo identification database – Helps tracing authors and check for copyright
- [Snopes.com](#) - Urban Legends Reference Pages
- Verification Handbook – [Verification Tools](#)
- [ELA Foto Forensics](#) – Very good article featuring information, examples and drawbacks of this technique
- [A Guide to Verifying Digital Content in Emergencies](#)
- [5 tips for verifying citizen footage that every journalist should know](#)
- Columbia Journalism Review - [How to check if that viral video is true](#)
- Verification Handbook: [Video Case Study #1](#)
- Verification Handbook: [Video Case Study #2](#)
- Verification Handbook: [Video Case Study #3](#)
- [Fake Pictures](#) - Interesting amateur blog containing tens and tens of on-topic examples
- Verily – [How to become a digital detective](#)
- Ted Talk Video – [Markham Nolan: How to separate fact and fiction online](#) – In this TED Talk Nolan describes a case study in which the Storyful team tracks verifies a user generated Youtube video of lightening hitting a tree, using only free web tools.
- BBC Academy - [The Pope, the dictator, the fake photo: it pays to fact-check social media](#)

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Information were accurate at time of publication

Please report any error to cvarolip@aut.ac.nz

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