

Internet Searching, Geo-Tagging, Geo-Fencing and Open Source Investigations: A Plaintiff's Perspective

by Sean P. Kelly



If a picture is worth a thousand words, how much is a picture with the exact time and location embedded worth? How about a Facebook post, an Instagram tag, a tweet, a Tik Tok video, a YouTube video . . . ? With the development of the internet and social media, people are everywhere, and they leave a trail of digital breadcrumbs every time they tweet, post, tag, and so on. The truck crash in which the client cannot remember what happened and the traffic crash report only lists your client and the truck driver as witnesses? The train crossing collision where the client swears the lights and gates were not working? It turns out there was a witness, more than one, in fact. Their names? Mobile Phones, Video Cameras, Google, Facebook, Instagram, and YouTube, to name only a few.

A geotag is a piece of data embedded in a digital media file to indicate the geographical information about the subject, usually latitude and longitude.¹ Most, if not all, of our

mobile devices have GPS hardware and software built in. Those GPS coordinates are attached to every photo taken on a device unless the location services are disabled. Currently, there are more than 100 million iPhone users in the United States, accounting for about 45 percent of all smartphone users in the country. Overall, more than 250 million people in the United States use a smartphone, which means that roughly 80 percent of the country's population has access to a smartphone.² As the iPhone is the most popular smartphone in the United States, I use this device as a model. In Settings / Privacy / Location Services, all the apps that have access to location-based data are listed. Additionally, at the bottom of the page, in System Services / Significant Locations, the locations that your phone has tracked independently of any app can be found. Your phone is tracking your location even when you are not accessing an app. In a 2015, article in *The Atlantic* entitled "How Many Photographs of You Are Out

There In the World," the author cited Mary Meeker's 2014 annual internet trends report: "people uploaded an average of 1.8 billion digital images every single day. That's 657 billion photos per year. Another way to think about it: Every two minutes, humans take more photos than ever existed in total 150 years ago."³ This is an astonishing figure and reinforces the idea that someone is always watching.

Criminal investigations have used the internet to solve crimes including murders. In a 2019 article in the *New York Times*,⁴ a reporter chronicled a murder investigation in which police obtained a search warrant that required Google to provide information on all devices it recorded near the killing. The article went to explain,

The warrants, which draw on an enormous Google database employees call Sensorvault, turn the business of tracking cellphone users' locations into a digital dragnet for law enforcement. In an era of ubiquitous data gathering



by tech companies, it is just the latest example of how personal information — where you go, who your friends are, what you read, eat and watch, and when you do it — is being used for purposes many people never expected.⁵

Google is just one of many companies that track user locations and store the information, potentially making that information available to others in the future.

Photos and videos document every aspect of people's daily lives on the internet. See something interesting, take a photo. People nowadays are more likely to grab their phone when they observe something happening than they are to help or get involved with what they are photographing. The recent riots in dozens of cities across America in response to the murder of George Floyd have been profiled all over the news; many of the videos and photos were pulled from social media and taken by individuals, not news cameras. According to the Pew Research Center, Facebook is one

of the most widely used social media sites among adults in the United States. Roughly seven in ten adults (69 percent) say that they use the platform. YouTube is the only other online platform that was measured that matches Facebook's influence: 73 percent of adults report using the video sharing site.⁶

In addition to geotag information built into cell-phone photographs, a geotag can be added to many posts on social media; in fact, "most of the big social networks have geotagging features built right into them these days."⁷ These social media sites — Facebook, Instagram, Twitter, Snapchat — can then be searched by any user to find specific posts made at a certain location at a certain date and time. This is an extremely useful tool when searching for that unknown witness.

With so many social media platforms, how does one pull all this information together in a single package that a user can search and navigate? Geo-fencing is the practice of using global positioning to define a geographic boundary. Then, once

this "virtual barrier" is established, the administrator can set up triggers that send a text message, email alert, or app notification when a mobile device enters (or exits) the specified area.⁸ Typically, law enforcement have used geofencing to track global positioning system (GPS) devices on vehicles: A geofence is set up around a certain perimeter of the GPS device once it is attached to the vehicle, and law enforcement receive alerts when the vehicle leaves the geofence area.⁹ However, a geofence can be used for other purposes. A geofence can also be created on location-based social media posts, both real-time and historical, and can be used, for example, to determine when someone is near an airport or famous landmark, anywhere in the world.

Where to Look and How to Find What You Are Looking For

Even if you are no wizard on the computer, anyone can search the internet using some basic tools that are

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easy to understand and use. An excellent research tool can be found in the book “Open Source Intelligence Techniques,” by Michael Bazzell.¹⁰ Everyone should be familiar with the various search platforms available. Google is the most well-known, although there are others, such as Bing and Yandex. Typing *Sean P. Kelly* into the Google search engine returns about 272,000,000 results. No one has the time to sift and search through all this data. However, Google allows a search to be refined and limited. Similar to LexisNexis, the use of quotation marks narrows the results. Typing “*Sean P. Kelly*” returns about 42,800 results (Figure 1).

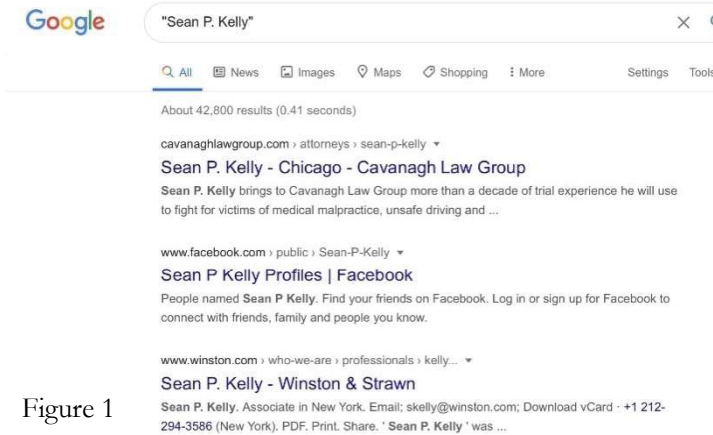


Figure 1

However, this is still too large a number to provide any meaningful information. Google thus allows additional commands to be used to further refine a search. For instance, you can search within a website for results on an individual. If you type *site:cavanaghlawgroup.com* “*Sean P. Kelly*,” Google returns about 111 results (Figure 2) – a manageable amount that is easy to search. This tool can be used to navigate any website, even if the pages are considered private. If the user or website ever linked their private page from a public page, once Google has indexed the page, the content can be viewed with the *site:* search.

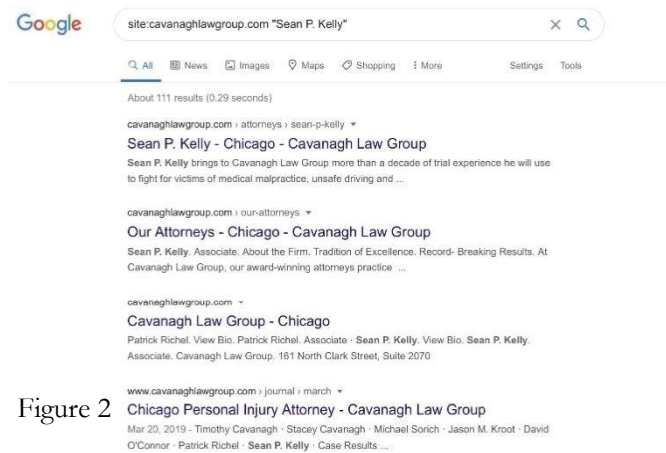


Figure 2

Beyond searching websites, tools are available to exclude specific content from appearing within results. The hyphen (-) allows a search to exclude certain results. For example, searching “*Sean P. Kelly*” “*Attorney*” “*Chicago*” yields about 4,780 results, and right towards the top of the results is an attorney from Winston & Strawn (Figure 3). If the search is modified to exclude those results by typing “*Sean P. Kelly*” “*attorney*” “*Chicago*” -*Winston*, the results are paired down to about 1,480 (Figure 4). The search can continue to be paired down by adding additional hyphens and words.

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Figure 3

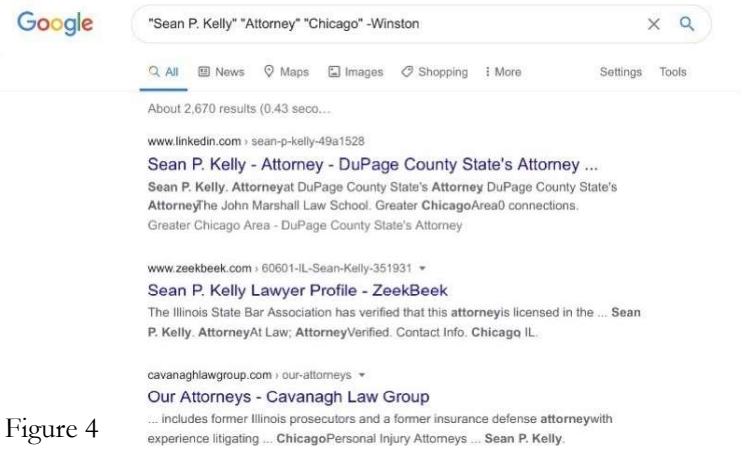


Figure 4

Google and Bing can be searched for just about anything, and this is not limited to people. One can search for specific types of files (*filetype:extension search term*) or in a specific time range of when the pages were indexed by Google. Using the example shown above, in Figure 4, with 1,480 results, if the “Tools” button is clicked, Google will show a drop-down menu that allows the user to filter the results by the date in which the pages were indexed. A user can choose the past hour, past twenty-four hours, past week, past month, or past year or can input a custom range. If I choose to limit the results of the above search to the past year, Google returns five results. This is an invaluable tool with which to search for someone or something within a specific timeframe.

Searching for a photo or video of specific location at a specific time is more time consuming. Given that individuals use multiple social media accounts for different purposes, this type of search generally requires a search within the social media platform itself. Additionally, almost all social media platforms require you to have an account to use the search features. As discussed earlier, Facebook is the most popular social media platform in the world, so I begin there. Once a user has logged into the app or onto the desktop site, a search bar is visible at the top of the page. The search starts there. Let’s say the user is searching for a photo or video of something that happened at the Daley Center: Type *Daley Center* into the search bar, and Facebook provides all types of tabbed results: Posts, People, Groups, Photos Videos, and so on. In the Videos tab at the top of the page, Facebook provides all videos that have “Daley Center” tagged in the video post. From there, you can filter and sort the results by the date on which they were posted. It then becomes easier to search for a specific date. A Facebook search can

also be more specific in its parameters. For instance, Facebook also allows the search: *car crash Chicago*, and the search can be narrowed down by time and location. This requires some amount of digging but can assist in finding a needle in a haystack.

Twitter, Instagram, and YouTube all have a search function on their platforms similar to that of Facebook. Some trial and error is required to get the search right. <https://www.omnisci.com/demos/tweetmap> is a great resource for location-based searching via Twitter on a map. This website was created through a collaboration between Harvard and MIT and consists of a massive database that allows one to search by username, topic, location, or a combination of all three. In the middle of the screen, a map of the world can be shrunk down to a street corner. Here, the top hashtags used within the area that is searched are used, and blue dots associated with the tweet are displayed on the map. The bottom of the screen contains a date range, which is modified when the user scrolls in or out of the location and which allows the user to select a specific timeframe. If the user clicks on a blue dot, the username of the person who made the tweet and the date of the post is shown. For example, I zoomed into the block containing the Daley Center, and the site revealed 68 tweets, of which the top four hashtags were #chicago, #photograph, #architecture, and #picasso. The mapping can be useful for searching a specific location at which a client was injured. The user can view what tweets were made at a specific location and when they were made. Maybe someone tweeted a photo of your client after the negligent occurrence, or a photo of the potential defendant. The possibilities of what can be located are endless. What about grouping all social media sites together and seeing all posts made within a specific area for a specific time? The majority of sites of this type are paid

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sites or are limited to specific industries. Snapstrends¹¹ is a paid software program that allows a social media search by location, keyword, or user profile in real-time and with an unlimited geo-fencing lens size. Geofeedia¹² is another paid tool, which allows the user to select the area for which they want to pull social media data by drawing a circle around it. The tool then pulls geotagged data from Twitter, Instagram, Facebook, YouTube, and Flickr.

Google Images¹³ works similarly to the Google search method outlined above: The user can search using specific search terms and exclude results based on phrases and timeframe. A useful tool on Google images is to “reverse” search using an image the user already possesses. The user could potentially locate other photos of the area in which the incident occurred. Once the user finds a photo of the area in question, it can be refined to the date in question. Perhaps an unknown witness posted a photo of the location in question. Once the user finds a related photograph, they can click on it to find its origins and, potentially, the person who took it.

Andrew Garrett of Garrett Discovery is an expert in computer forensics and GPS location data and a former U.S. Navy serviceman assigned to Naval Research Lab at NASA in the Geospatial Division. He relates the following in regard to geo-tagging and geo-fencing:

Mobile phones, in-car navigation systems, social media platforms, and many other devices store geo-tagged data. This data can be used to locate witnesses, establish a timeline, or provide an alibi by placing a suspect in a different location. Think about a trucking accident resulting in death with no witnesses . . . this can be a daunting case with many discovery challenges. You now have options, such as placing a geofence around a stretch of highway on a map, coupled with a window of time and the

ability to request from social media companies and mobile network operators a list of individuals who were present or nearby all based on geo-tagged data. Often, when faced with a lot of geo-tagged data or [a] complex situation, you may find that a forensic expert and the sophisticated tools they use is a more logical choice.

His company specializes in all types of forensic extraction and analysis and is an excellent resource for anyone seeking guidance and assistance with forensics and location-based investigations.

Other GPS Location Data Applications

With the advent of GPS location data and the availability of smartphones, businesses frequently use apps to keep track of their employees. This is a particularly useful tool for a plaintiff if they are injured in the course of defendant’s employment. A truck driver’s phone may be a gold mine of information about where they were, where they were going, whether they had rested, and how fast they were going. Keep Truckin’ is a service for trucking companies that provides a range of information about a truck using the driver’s mobile device and a GPS device on the truck itself. The company purchasing the service decides what options it wants for its fleet; the service can provide data including speed, direction, and vehicle health and the location of drivers, vehicles, and trailers. Samsara,¹⁴ a similar company to Keep Truckin’, shows vehicles in real time and pairs with integrated dash cams and driver-safety scores to provide automatic alerts about speeding, idling, and geofences. After a truck crash, the aforementioned data is vital to providing a timeline for the plaintiff regarding the defendant’s whereabouts, as the data is not subject to different versions of the truth.

In 2015, the Federal Motor Carrier Safety Administration mandated the

use of Electronic Logging Devices (ELDs).¹⁵ An ELD is a piece of electronic hardware that is attached to a commercial motor-vehicle engine to record driving hours¹⁶ and that tracks data that includes location data, when the driver changes duty status, and when the driver indicates personal use or yard moves. Keep Truckin’ and Samsara both offer ELDs with their service, but there are hundreds, if not thousands, of companies and devices that can provide different versions of an ELD. Certainly, any plaintiff will want access to a truck’s ELD device in the event of any trucking collision.

Geotagging, Geofencing and Open Source Investigating in Action

Seeing the steps used in a real case, with real results, helps to understand the process and its importance in an investigation. Two examples from Cavanagh Law Group come to mind. The first involves a dooring incident where the client was riding a bike and the door from a taxi opened into the client. The client suffered major injuries but at the outset we could only identify the front passenger in the taxicab. His memory of who were the back-seat passengers had magically vanished. After completing written discovery and taking numerous depositions; the two-year statute of limitations (SOL) was quickly approaching and not one witness could identify or remember the person who opened the door to the taxi. Seeing what the internet had to provide seemed like a last-ditch effort. First, we issued a subpoena to the front seat passenger’s cell phone carrier to see whom he called and texted the night of the incident. From there, your author ran a search on Facebook using a geofence around the area at issue in and around the relevant time and I was able to locate two of the front passengers phone contacts who were in the area of the incident within the relevant timeframe. One of those people had a distinct memory of being



in the taxi and who opened the door into our client's path. The complaint was amended within six days of the SOL. We had our guy.

The second example involved a train collision where the client suffered a catastrophic injury. The defense was adamant our client was trespassing past a chained gate at the time she was injured. The defense was unyielding in their position that our client unlatched the gate to gain access to the area where the injury occurred. By conducting a reverse Google image search, our firm located a photo taken prior to the date of the client's injury which showed the gate appeared to have been unlatched for a lengthy period of time. The firm then located and interviewed the individual who took the photo and another witness who related the chained gate was always unlatched. The result? A 7.5-million-dollar settlement for our client. These techniques work and win cases.

The Court and GPS Location Data

Once a photo has been acquired or an individual identified from a search, this leads to the question of how that information can be used to win the case and get justice for the client. The first step is to contact the user who posted the photo or is related to the investigation and ask to speak with them. As with any photo or video evidence, one must lay the foundation that what is depicted in the photo or video fairly and accurately depicts the object or scene at the time it was taken. Who better to testify to that than the photographer?

To explain what geotagging data or geofencing data entails will likely require the use of a forensic expert. The court and the jury would need to understand how this metadata information is created, stored, and recovered at any trial. Given the relatively recent advent of geotagging and geofencing, there is relatively little case law on the subject. In *United States v. Post*,¹⁷ federal

agents obtained an image of child pornography on the internet and then used its metadata to identify the GPS coordinates at which the photo had been taken with an iPhone. That data then led the agents to the home of the defendant. The court held that

Post shared an illicit image on what is today perhaps the most public medium imaginable—the internet—so that others could see it. For the reasons explained above, he did not have a privacy interest in the metadata embedded in that image, and the government did not engage in an unconstitutional search when it used that metadata to find him.¹⁸

Once someone places a photo or video on the internet, it is fair game. The person cannot use the 4th Amendment as a shield.

Testimony regarding geo-tagging and geo-fencing likely falls within the rules governing electronically stored information, commonly referred to as ESI, and indeed, Illinois courts have limited the disclosure and discovery of this information:

Inspection or testing of a responding party's electronic information system (e.g., a computer) may raise issues of confidentiality or privacy. The addition of provisions for testing and sampling to Fed. R. Civ. P. 34(a) with regard to electronically stored information is not meant to create a routine right of direct access to a party's electronic information system. Fed. R. Civ. P. 34(a), Committee Comments. Indeed, because the mere imaging of the media, in and of itself, raises privacy and confidentiality concerns and duplication, by its very nature, increases the risk of improper exposure, whether purposeful or inadvertent, even the entry of a carefully drafted protective order might not be enough to overcome the privacy concerns arising in a particular

case. Thus, courts are very cautious about ordering mirror imaging of computers, especially where the request is overly broad and where the connection between the party's claims and the computer is vague and unproven. For all of these reasons, compelled forensic imaging should be a last resort. Further, in making such a determination, a court must consider the balancing test of the proportionality rule, considering the appropriate monetary and nonmonetary factors present in the case before it to determine whether the burdens resulting from forensic imaging outweigh the likely benefit.¹⁹

A plaintiff must thus make a specific request for information, and courts will typically rule that the information need not be produced if the benefits of producing it do not outweigh the burdens. A request for a defendant's entire cell phone contents is likely to be met with skepticism. A request for a social media post on or around a certain date is thus a better route to take to ensure that everyone's privacy concerns, especially the court's, are being satisfied.

Conclusion

Geo-tagging, geo-fencing, and open-source investigating are exciting tools that can assist in finding witnesses, photos, and information in a manner that was impossible in the past. Attorneys must realize, however, that this is a two-sided coin: The defense has access to the same information, if they know where to look. It is always wise to counsel your clients that someone is always watching, even if they are sitting 50 or 100 miles away in their office chair. The internet is a powerful tool for both sides.

The methods and tools that have been presented above are only the tip of the iceberg: Thousands of other methods, websites, and software programs are available, and you do not



need to be an internet wizard to find what you are searching for. As stated above, the book by Michael Bazzell is an invaluable resource that provides a how-to guide to search the internet and more. It is well worth the \$40.00 to have a copy on your shelf to consult when beginning or continuing a search. Just don't buy the book online: You leave a trail of breadcrumbs that can be found.

Endnotes

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¹² <https://geofeedia.com/>.
¹³ <https://images.google.com/>.
¹⁴ <https://www.samsara.com/>.
¹⁵ 49 CFR Parts 385, 386, 390, and 395.
¹⁶ https://en.wikipedia.org/wiki/Electronic_logging_device.
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¹⁸ *Id.* at 606.
¹⁹ *Carlson v. Jerousek*, 2016 IL App (2d) 151248, ¶ 1, 409 Ill. Dec. 667, 669, 68 N.E.3d 520, 522.

Sean P. Kelly is a Senior Associate at Cavanagh Law Group who concentrates his practice in catastrophic personal injury, wrongful death and medical malpractice. Prior to joining Cavanagh Law Group, Sean worked for twelve years as Assistant State's Attorney at the DuPage County State's Attorney's Office - never losing a felony jury trial. Sean's legal skills and passion for justice have led to numerous successful results for his clients. Aside from his involvement in the legal profession, Sean is also a member of the Irish Fellowship Club of Chicago and volunteers with PAWS Chicago. He lives on the Northside of Chicago with his wife, Erica, and two boys.



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