



# RECNT: An Introduction to Image Metadata - Where is Sandy Eggo and When Were They There?



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## Introduction/Engagement

This lesson will combine aspects of cyber security, digital forensics, computer science, and computer applications. Working in small groups, students will utilize the engineering process to select tools as well as determine which image files to use in their investigation.



Where in the World?

Using Image Metadata

## Background Story

A warrant was issued for the semi-notorious criminal Sandy Eggo's cell phone. Image files were found that can be used as evidence of Sandy Eggo's whereabouts. Results need to be reported in the form of a timeline before the end of the week.

## Metadata Viewer

Jeffrey's Image Metadata Viewer

URL: [input field]  I'm not a robot

This tool remains available so long as I can keep it free and the bandwidth doesn't cost me too much. A gift of thanks is always appreciated, but certainly not required. [Send a gift via PayPal](#), or perhaps an Amazon gift certificate (to: j1c1e1@lyon.com), or perhaps send me some good karma by doing something kind for a stranger.

If you have questions about this tool, please see the [FAQ](#).

**Basic Image Information**

Target file: IMG\_818.JPG

Camera: Apple iPhone 5s  
 Lens: iPhone 5s back camera 4.15mm f2.2  
 Shot at 4.2 mm  
 Exposure: Auto exposure, Program AE, 1/1368 sec, F2.2, ISO 32  
 Flash: Off. Did not fire  
 Date: April 2, 2016 5:28:49PM (timezone not specified)  
 (2 years, 1 month, 17 days, 8 hours, 41 minutes, 6 seconds ago, assuming image timezone of GMT)  
 Location: Latitude Longitude: 64° 08' 45.4" North, 21° 55' 35.4" West  
 (64.142942, -21.926497)  
 Map via embedded coordinates at: [Google](#), [Yahoo](#), [Wikimapia](#), [OpenStreetMap](#), [Bing](#) (also see the [Google Maps](#) page below)  
 Altitude: 32 meters (105 feet)  
 Camera Positioning: East  
 Timestamp given from webtools.org: GMT  
 File: 3,244 x 2,448 JPEG (8.0 megapixels)  
 2,179,402 bytes (2.1 megabytes)  
 Color Encoding: **WARNING:** Color space tagged as sRGB, without an embedded color profile. Windows and Mac browsers and apps treat the colors randomly.  
 Images for the web are most likely variable when in the sRGB color space and with an embedded color profile. See my [Introduction to Digital Image Color Spaces](#) for more information.

Extracted 140 x 120 9.4-kilobyte "thumbna11.jpeg" JPG  
 Displayed here at 200% (1/5) the area of the original

Main JPG image displayed here at 14% width (1/7) the area of the original

Click image to enlarge, click this text to show homepage

Activate Windows  
Go to Settings to activate Windows.

## Procedure/Exploration

Students will choose online tools to view metadata from the image files. Next, they will need to decide which image files should be included in the timeline.

## GPS Position on a Map

Google Maps interface showing a satellite view of a city street grid. A location is marked with a red pin, and a sidebar on the left displays the coordinates 64°08'45.4"N 21°55'35.4"W and a list of nearby photos.

## Assessment/Evaluation

Completed timelines will be submitted as an assessment for evaluation. Is the timeline complete? Are all of the included image files correct and valid? Will this help to prove the whereabouts of Sandy Eggo?

## Timeline

Excel File Edit View Insert Format Tools Data Window Help

Sandy Eggo Timeline.xlsx

File Name	Date	Time	GPS Position	Name of Location	Address (if available)
IMG_8410.JPG	March 26, 2016	8:44:33 AM	39.506850 degrees N, 119.773833 degrees W	Reno Tahoe Airport	2001 Plumb Lane, Reno, NV 89502
IMG_8420.JPG	March 26, 2016	11:04:39 AM	47.446572 degrees N, 122.304039 degrees W	Mezzanine level next to, Seattle-Tacoma International Airport Concourse C, Gate C16, SeaTac, WA 98158	
IMG_8453.JPG	March 27, 2016	10:19:01 AM	64.149650 degrees N, 21.937033 degrees W	Austurbakki, 101 Reykjavik, Iceland	
IMG_8460.JPG	March 27, 2016	10:45:41 AM	64.150100 degrees N, 21.932592 degrees W	101 Reykjavik, Iceland	
IMG_8461.JPG	March 27, 2016	10:48:37 AM	64.150117 degrees N, 21.932781 degrees W	101 Reykjavik, Iceland	
IMG_8478.JPG	March 27, 2016	11:20:25 AM	64.149453 degrees N, 21.931494 degrees W	Kalkofnsvegur 2, 101 101, 101 Reykjavik, Iceland	
IMG_8535.JPG	March 28, 2016	2:48:39 PM	65.206833 degrees N, 18.667061 degrees W	Skagafjörður, Iceland	
IMG_8564.JPG	March 28, 2016	4:05:29 PM	65.680953 degrees N, 18.087886 degrees W	Kaupvangsstræti 1, Akureyri, Iceland	
IMG_9070.JPG	April 2, 2016	3:31:09 PM	65.637283 degrees N, 18.536450 degrees W	Northeastern Region, Iceland	
IMG_9116.JPG	April 2, 2016	5:28:49 PM	64.145942 degrees N, 21.926497 degrees W	Hverfisgata 52, 101 Reykjavik, Iceland	
IMG_9185.JPG	April 3, 2016	4:37:12 PM	64.308831 degrees N, 20.223147 degrees W	35, Iceland	
IMG_9193.JPG	April 3, 2016	4:54:02 PM	64.326119 degrees N, 20.124539 degrees W	Unnamed Road, Iceland	
IMG_9298.JPG	April 5, 2016	11:18:36 AM	64.165942 degrees N, 21.706975 degrees W	Unnamed Road, Mosfellsbær, Iceland	
IMG_9298.JPG	April 5, 2016	10:47:50 AM	42.373622 degrees N, 71.120267 degrees W	CAMB-169-46, Cambridge, MA 02138	
IMG_9313.JPG	April 5, 2016	7:25:31 PM	30.200808 degrees N, 97.666581 degrees W	Austin, TX 78719	

## Activities/Extensions

Students may create their own scenarios by using image files created on their own devices. What happens to metadata when a photo is edited? What happens to metadata when a photo is uploaded on a website? What happens to metadata when a photo is attached to an email? Students may also explore editing metadata.

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