Challenging Reverse Warrants

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“Reverse” Warrants

- Geofence Warrants
- Keyword Warrants

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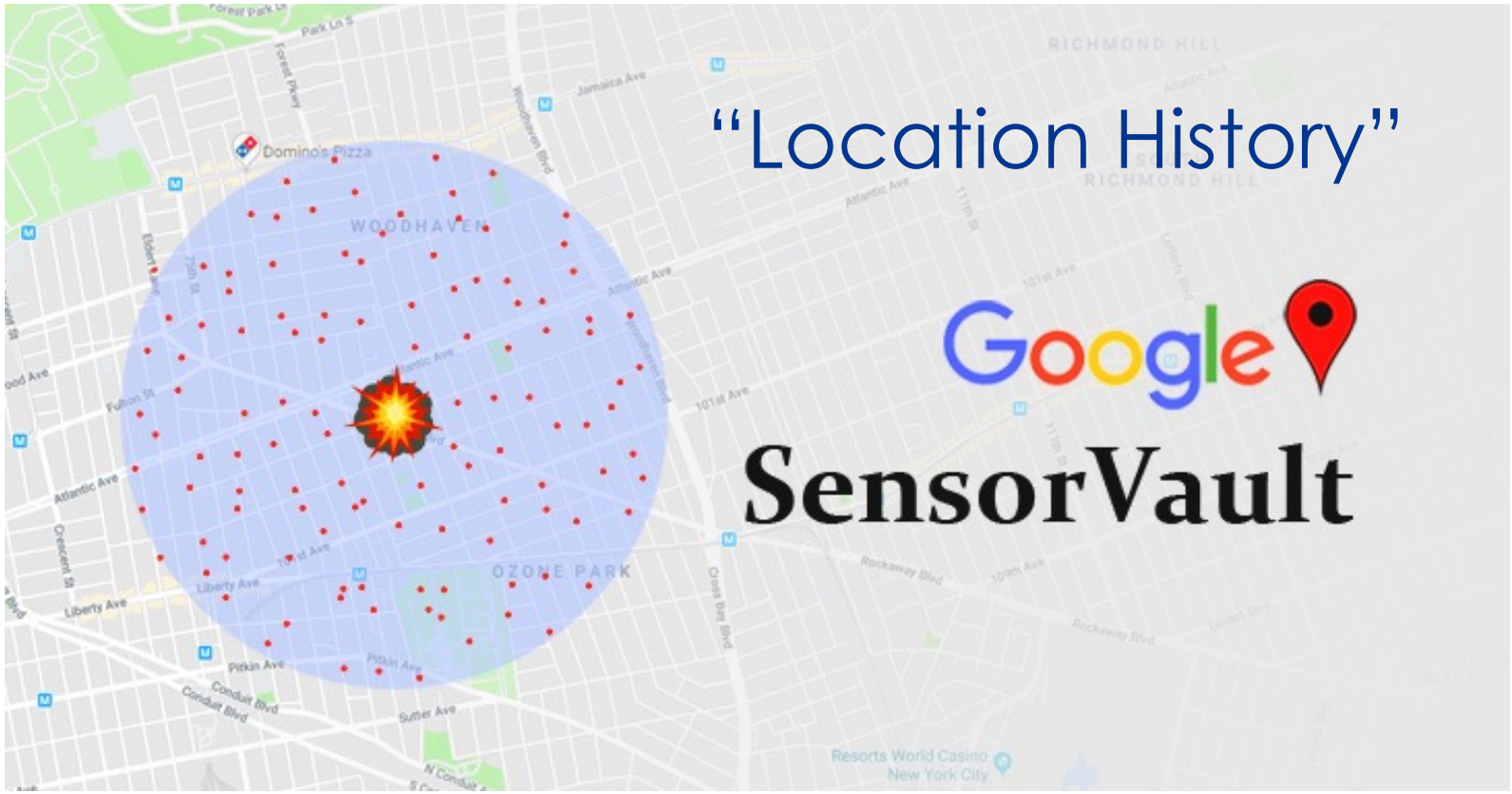
Geofence Warrants



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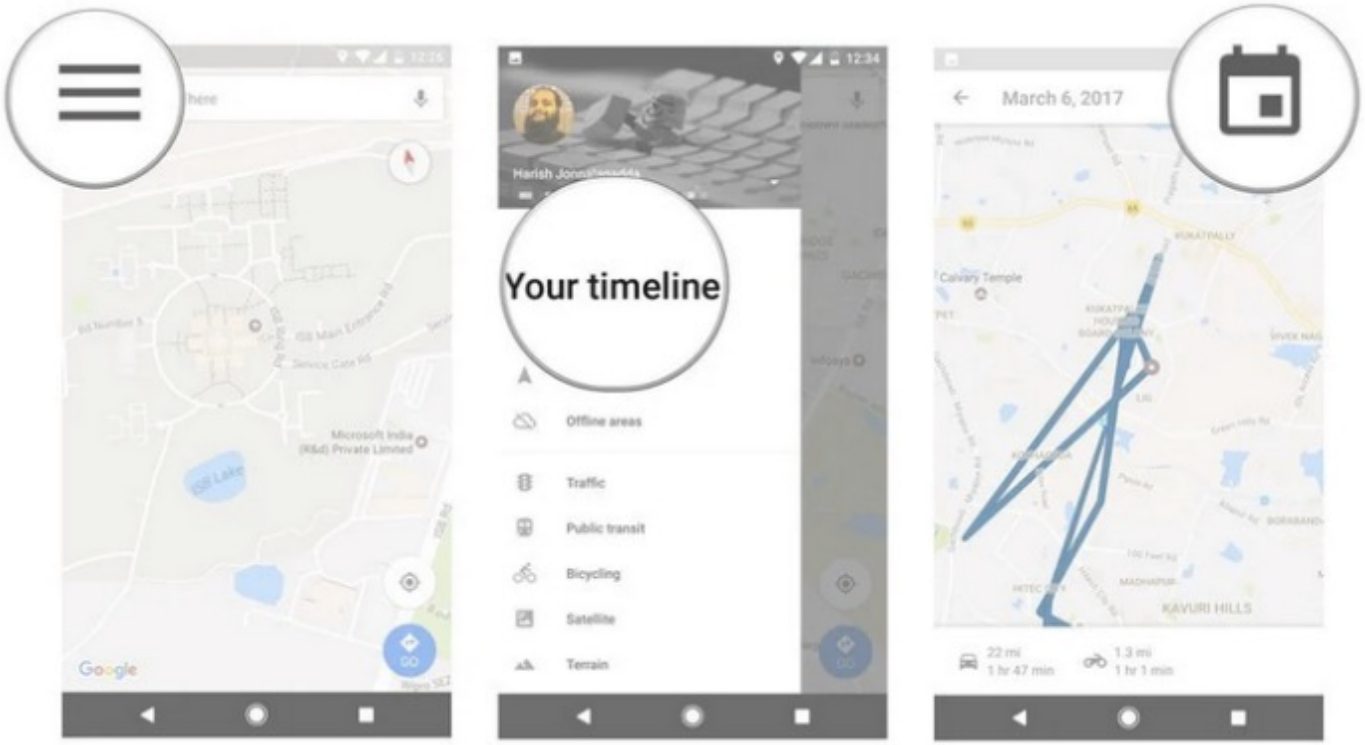
Location History - Android



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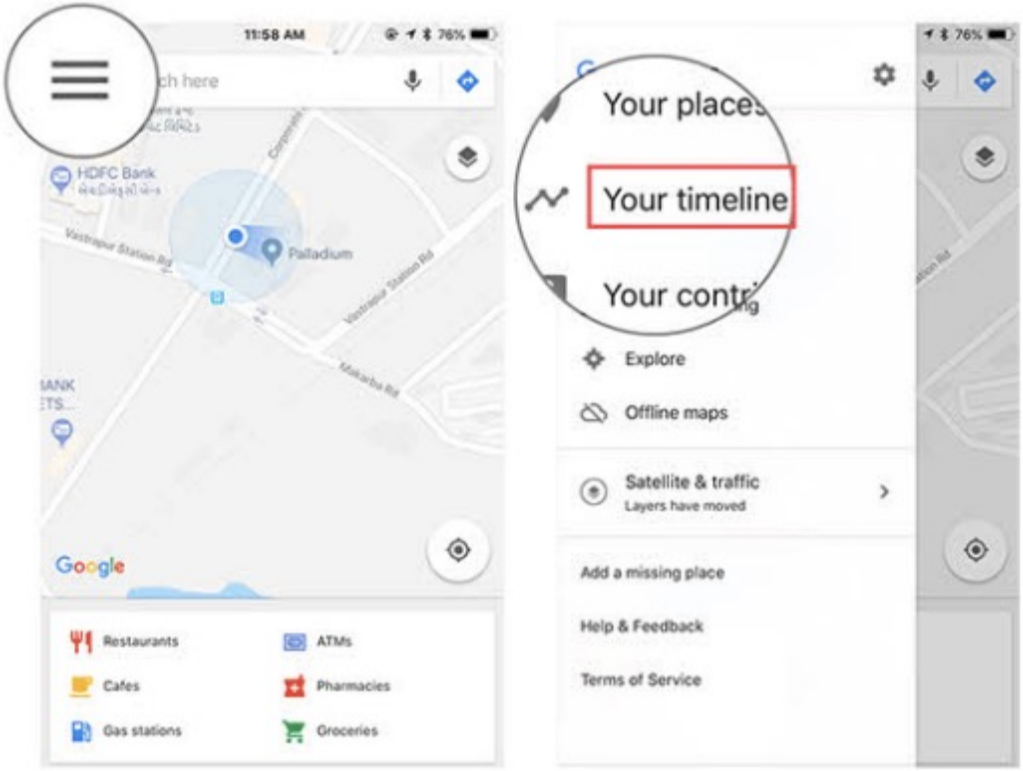
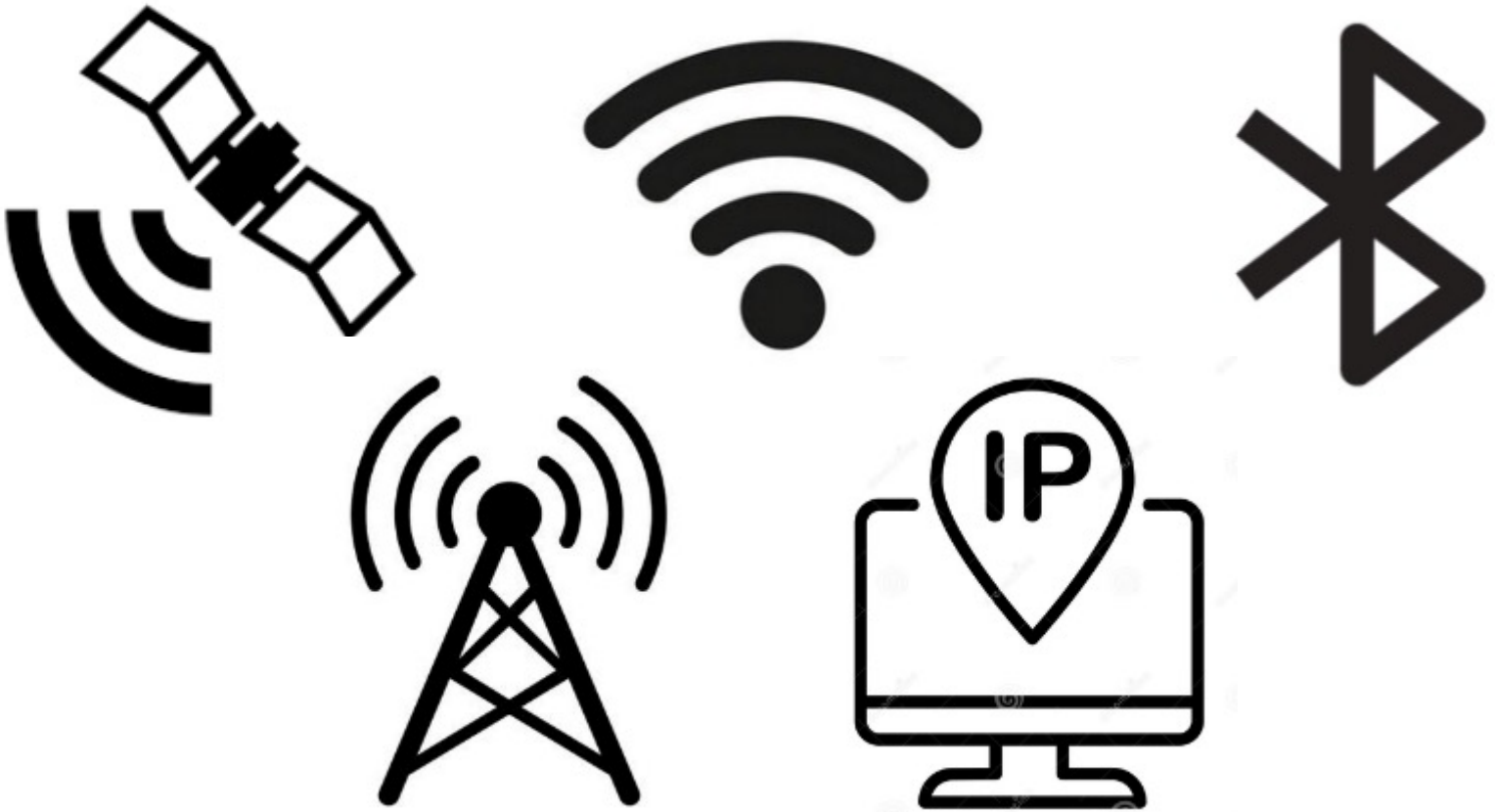
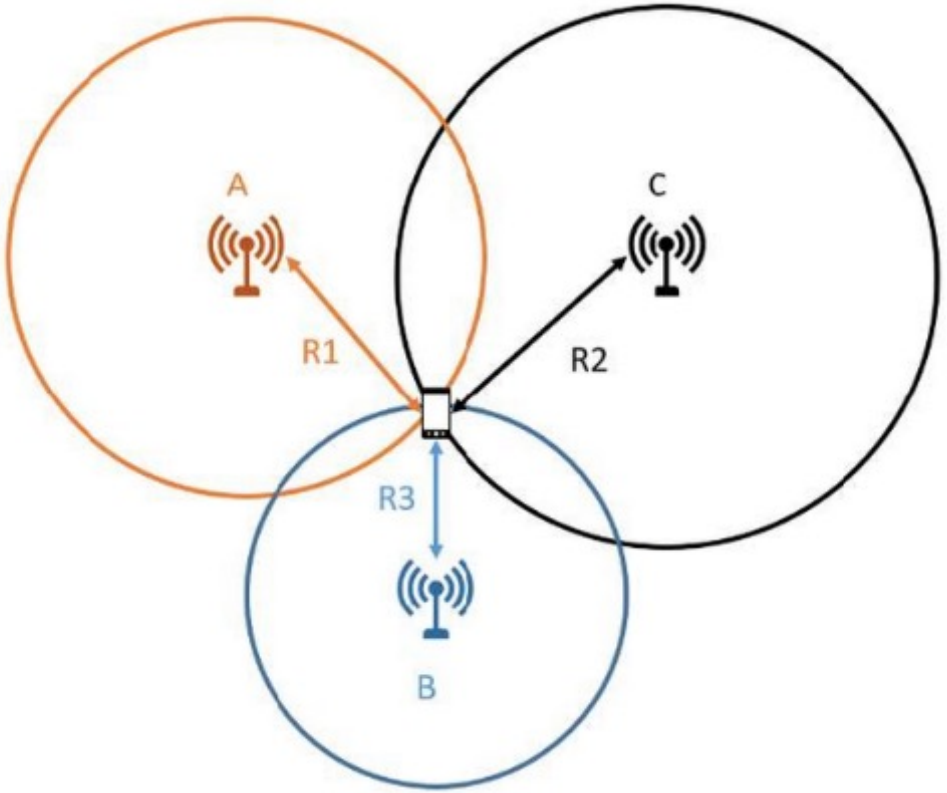
Location History - iPhone



Google Location Inputs

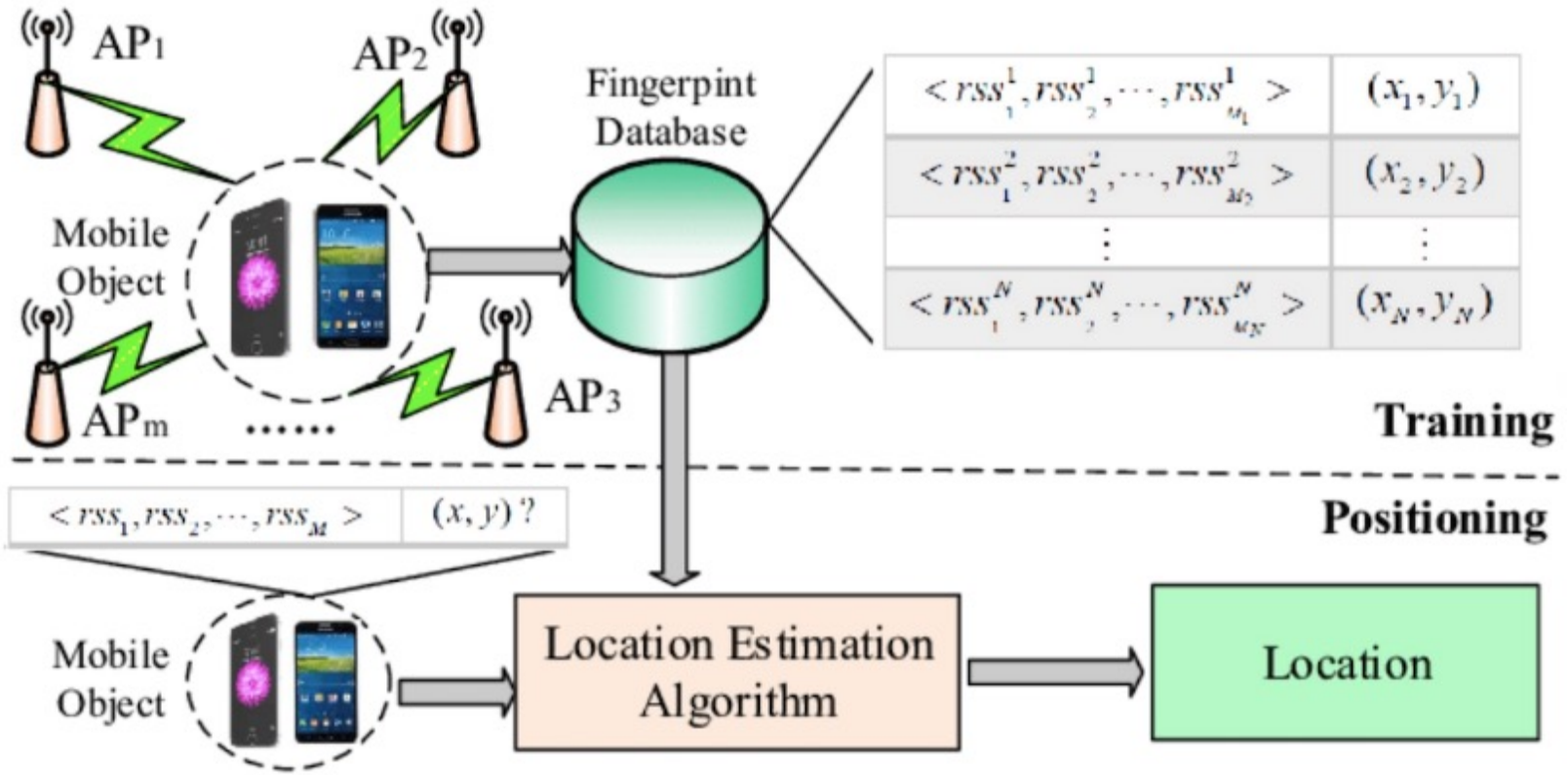


Determining Location from Wifi

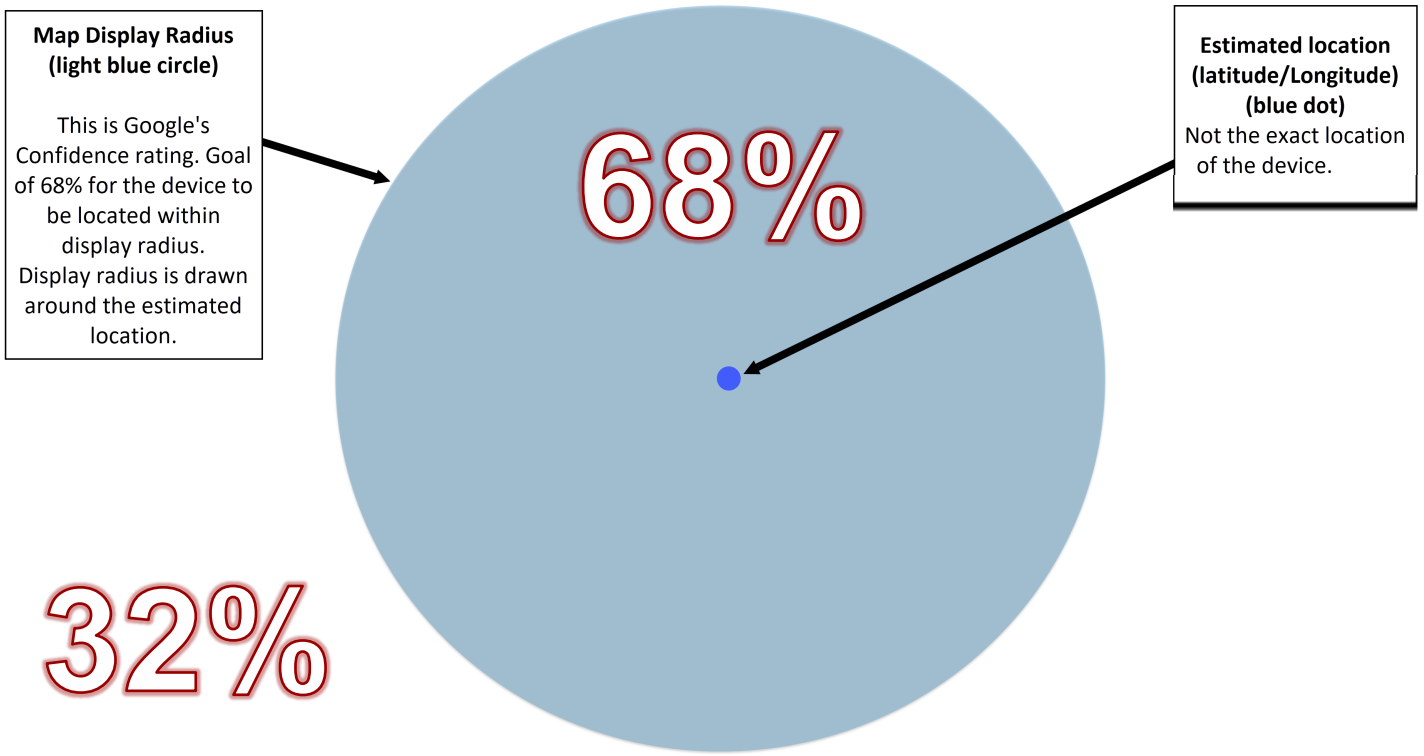


Wifi Fingerprinting

Wifi Fingerprinting



The “Display Radius”



	A	B	C	D	E	F	G
1	Device ID	Date	Time (America/New_York -04:00)	Latitude	Longitude	Source	Maps Display Radius (m)
2	-1844271119	5/5/19	13:50:16 (-04:00)	38.4385755	-72.5830677	WIFI	64
3	-855610485	5/5/19	13:50:04 (-04:00)	38.5109867	-72.5937566	GPS	20
4	707355578	5/5/19	13:50:48 (-04:00)	38.4340099	-72.5899681	WIFI	18
5	707355578	5/5/19	13:51:13 (-04:00)	38.4340132	-72.5900492	WIFI	21
6	2026055124	5/5/19	13:51:26 (-04:00)	38.4387778	-72.5874376	WIFI	32
7	-1314168616	5/5/19	13:51:28 (-04:00)	38.3979749	-72.6269825	WIFI	42
8	707355578	5/5/19	13:52:03 (-04:00)	38.4341597	-72.5897991	GPS	21
9	-1656231345	5/5/19	13:52:11 (-04:00)	38.4376312	-72.5836528	WIFI	78
10	-856710588	5/5/19	13:53:01 (-04:00)	38.5109834	-72.5937599	WIFI	14
11	1618885672	5/5/19	13:53:12 (-04:00)	38.4638788	-72.500162	CELL	1082
12	1285269888	5/5/19	13:53:18 (-04:00)	38.4730277	-72.5258491	WIFI	54
13	707355578	5/5/19	13:54:01 (-04:00)	38.4341432	-72.5898314	WIFI	32
14	2026055124	5/5/19	13:54:03 (-04:00)	38.4387711	-72.5874376	GPS	22
15	-1656231345	5/5/19	13:54:14 (-04:00)	38.4361963	-72.5866105	WIFI	88
16	1285269888	5/5/19	15:54:17 (-04:00)	38.4730232	-72.5258491	WIFI	78
17	707355578	5/5/19	13:54:20 (-04:00)	38.4341195	-72.5898222	WIFI	41
18	-1662304683	5/5/19	15:55:05 (-04:00)	38.4049011	-72.6663339	WIFI	55
19	907512662	5/5/19	13:55:14 (-04:00)	38.4356365	-72.5874086	GPS	18
20	1716665659	5/5/19	15:55:22 (-04:00)	38.4638722	-72.500162	WIFI	1832
21	-856710588	5/5/19	13:56:02 (-04:00)	38.510893	-72.5937372	GPS	21
22	-1656231345	5/5/19	15:56:12 (-04:00)	38.4392322	-72.5868294	WIFI	74
23	707355578	5/5/19	13:56:25 (-04:00)	38.4359301	-72.5894359	WIFI	31
24	2026055124	5/5/19	13:57:02 (-04:00)	38.4387718	-72.5874376	WIFI	28
25	707355578	5/5/19	13:57:06 (-04:00)	38.4411466	-72.5877318	WIFI	105
26	1285269888	5/5/19	13:57:16 (-04:00)	38.4708803	-72.530138	WIFI	52
27	1716665659	5/5/19	13:57:21 (-04:00)	38.460951	-72.5437475	WIFI	89
28	707355578	5/5/19	13:57:34 (-04:00)	38.4419377	-72.5863294	WIFI	94
29	-856710588	5/5/19	13:58:01 (-04:00)	38.5108923	-72.5937372	WIFI	42
30	707355578	5/5/19	13:58:02 (-04:00)	38.4432211	-72.5824252	WIFI	36
31	-1656231345	5/5/19	13:58:14 (-04:00)	38.441055	-72.5891742	WIFI	48
32	-1314168616	5/5/19	13:58:24 (-04:00)	38.397944	-72.6269877	WIFI	25
33	707355578	5/5/19	13:58:24 (-04:00)	38.4429704	-72.583653	WIFI	105
34	-1662304683	5/5/19	13:58:24 (-04:00)	38.4048487	-72.6661048	WIFI	67
35	707355578	5/5/19	13:58:44 (-04:00)	38.4431931	-72.5826004	WIFI	43
36	-1314168616	5/5/19	13:59:04 (-04:00)	38.397974	-77.6269877	WIFI	26

TRAINING DATA ONLY

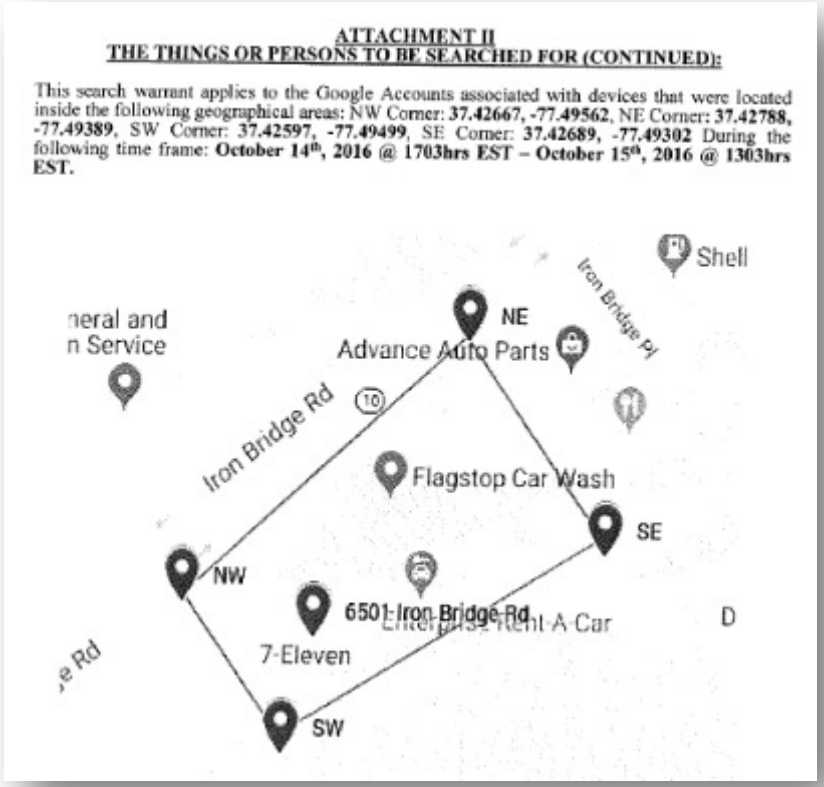
Designed to Sell Ads, Not Solve Crimes

DECLARATION OF MARLO MCGRIFF

roughly 68% of users. In other words, if a user opens Google Maps and looks at the blue dot indicating Google's estimate of his or her location, Google's goal is that there will be an estimated 68% chance that the user is actually within the shaded circle surrounding that blue dot.

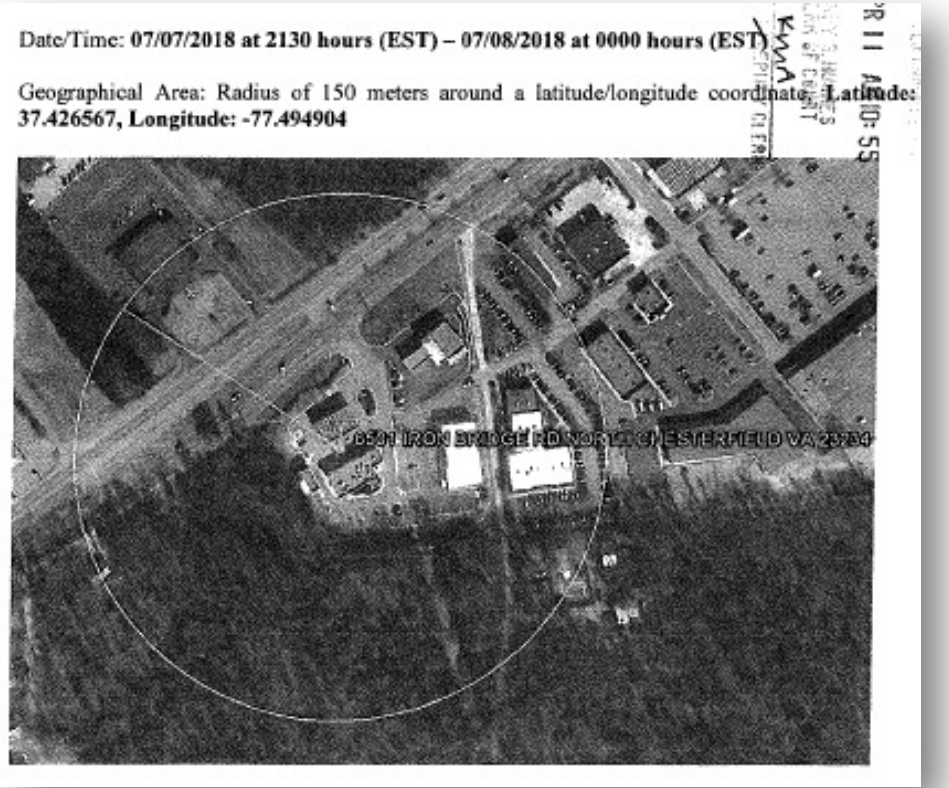
between that hotel and ski resort). Similarly, Google may use such inferred semantic place visits (not individual stored LH data points) for ads. LH is sufficiently precise and reliable for these purposes for which Google designed LH.

Geofence Warrant 3-Step Process



ATTACHMENT II
THE THINGS OR PERSONS TO BE SEARCHED FOR (CONTINUED):

This search warrant applies to the Google Accounts associated with devices that were located inside the following geographical areas: NW Corner: **37.42667, -77.49562**, NE Corner: **37.42788, -77.49389**, SW Corner: **37.42597, -77.49499**, SE Corner: **37.42689, -77.49302** During the following time frame: **October 14th, 2016 @ 1703hrs EST – October 15th, 2016 @ 1303hrs EST.**

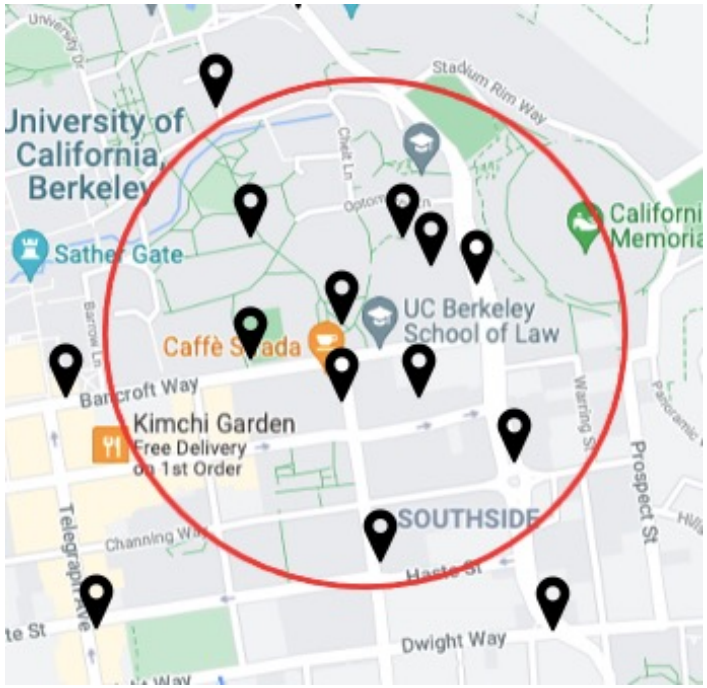


Date/Time: **07/07/2018 at 2130 hours (EST) – 07/08/2018 at 0000 hours (EST)**

Geographical Area: Radius of 150 meters around a latitude/longitude coordinate: **Latitude: 37.426567, Longitude: -77.494904**

Geofence Warrant 3-Step Process

1) Google provides "anonymized" data for devices "inside" the geofence



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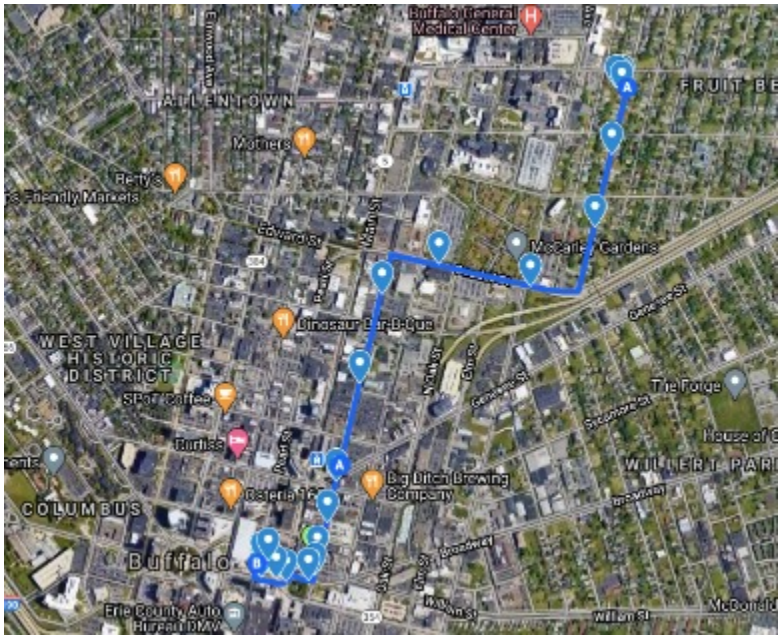
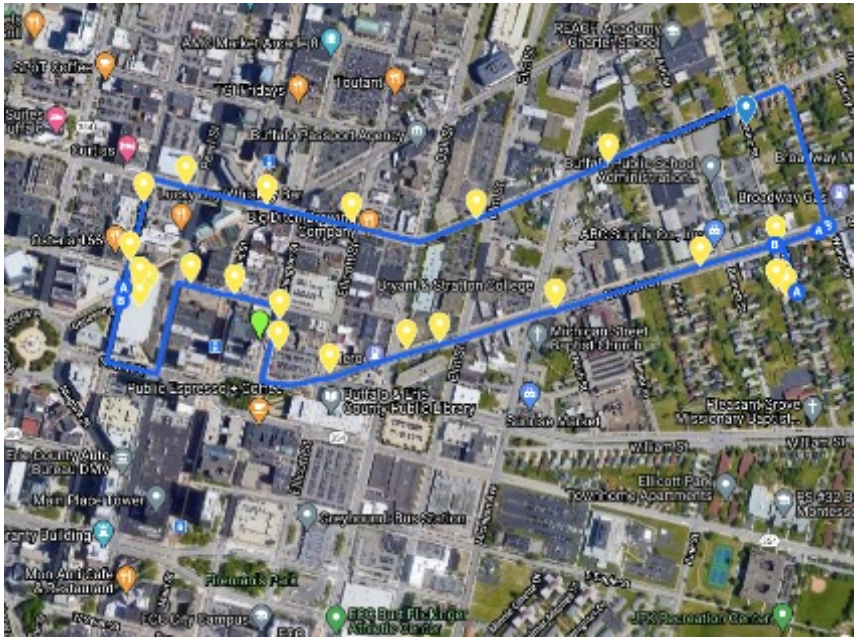
Geofence Warrant 3-Step Process

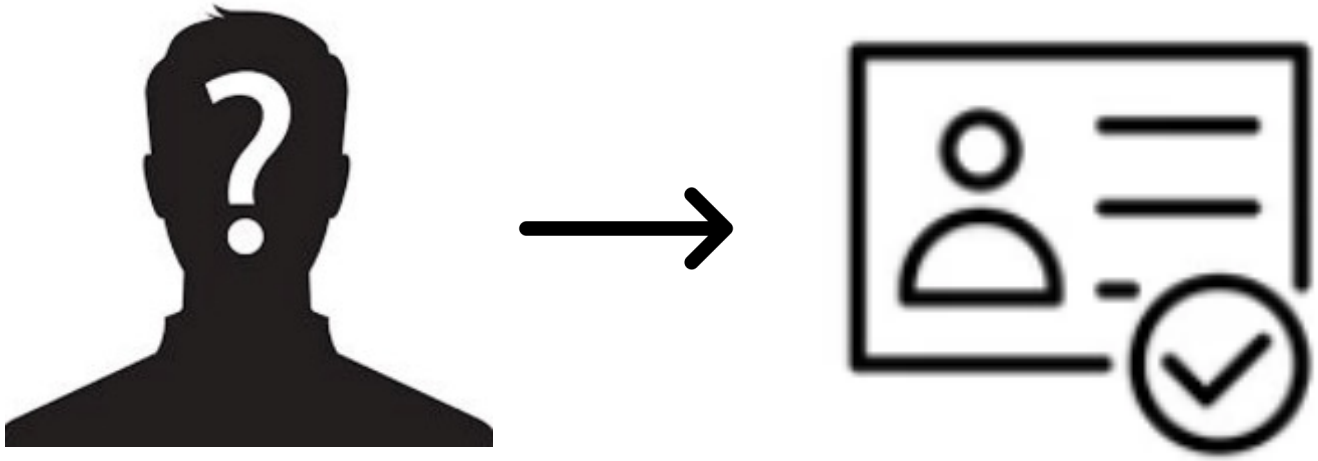
2) Police narrow the list, get additional data on "devices of interest" – no geographic limits, more time





Geofence Warrant 3-Step* Process

3) Police narrow it down to the finalists, then get "de-anonymized" info on selected users.



*Steps may vary.

Challenging Geofence Warrants

1. **A "Search" Occurred**
   - Reasonable expectation of privacy
   - Property interest
2. **Unconstitutional General Warrant**
   - Overbreadth
   - Lack of particularity
3. **No Good Faith**

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Electronic Device Location Information Act

Effective: September 19, 2019

16 M.R.S.A. § 648

§ 648. Search warrant needed for acquisition of location information

§ 647 **5. Location information.** "Location information" means information concerning the location of an electronic device, including both the current location and any prior location of the device, that, in whole or in part, is generated, derived from or obtained by the operation of an electronic device.

Reasonable Expectation of Privacy

Argue ***Carpenter v. United States***, 138 S. Ct. 2206 (2018):

- Citing "depth, breadth, and **comprehensive reach**" of CSLI (7 days or more)
- Contains the **"privacies of life"**
- Revealing to service providers is **not voluntary**

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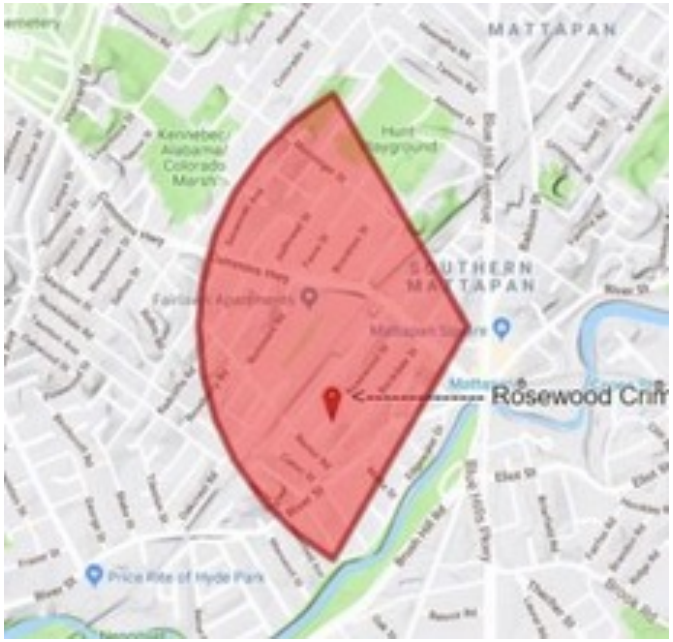
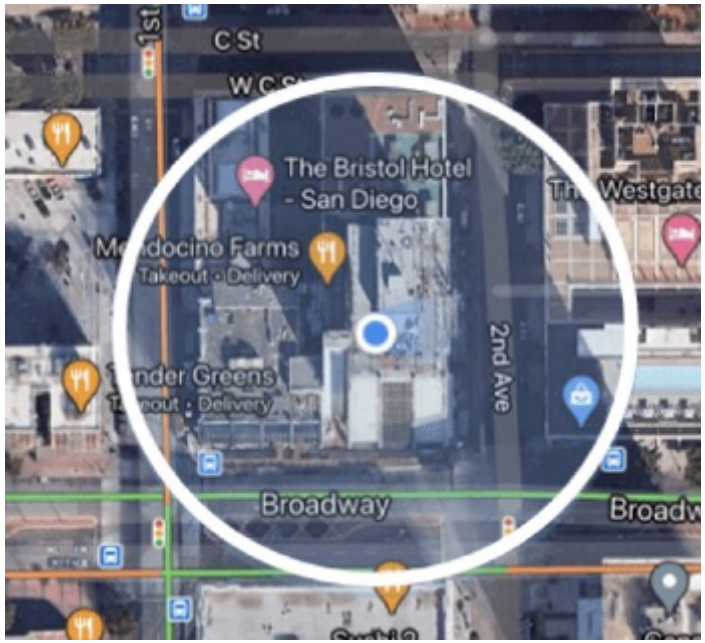
Comprehensive?
A Little Goes a Long Way

- Location History is **more potent** than CSLI:



vs.



Reveals the "**Privacies of Life**" Like GPS

- GPS & LH can both disclose: **"trips to the psychiatrist, the plastic surgeon, the abortion clinic, the AIDS treatment center, the strip club, the criminal defense attorney, the by-the-hour motel, the union meeting, the mosque, synagogue or church, the gay bar and on and on**." (Jones, accord. Carpenter)
- LH also identifies people inside homes & other places (not just on public roads)

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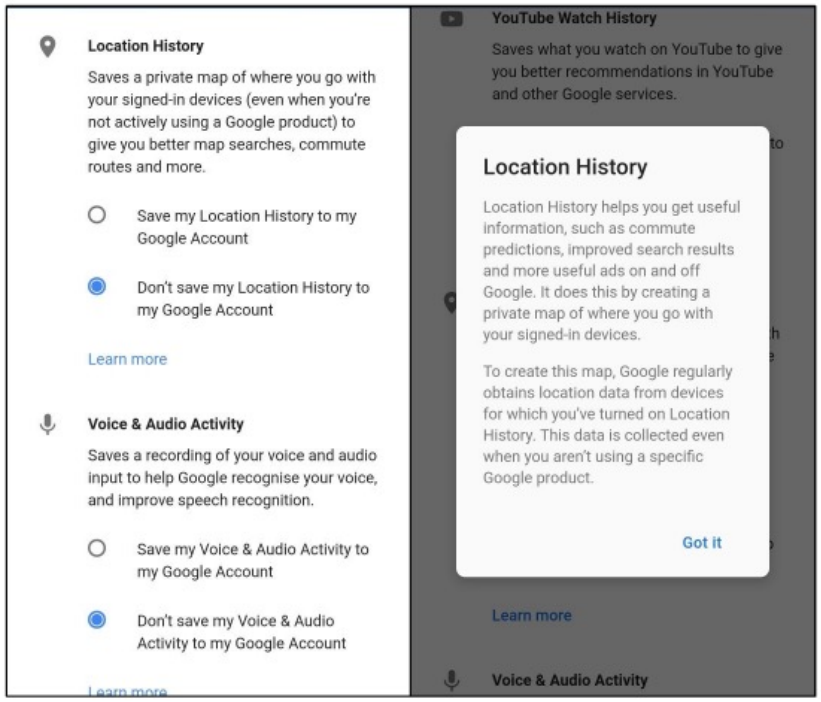
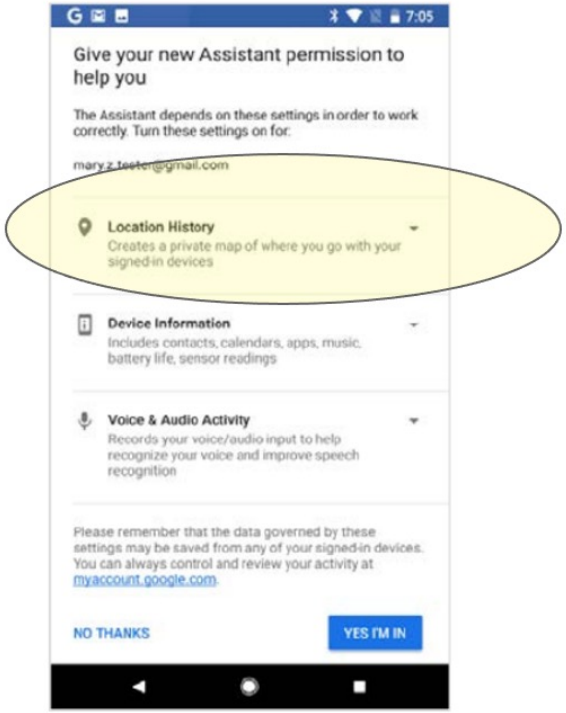
Voluntarily?
Click-wrap "Consent Flows"





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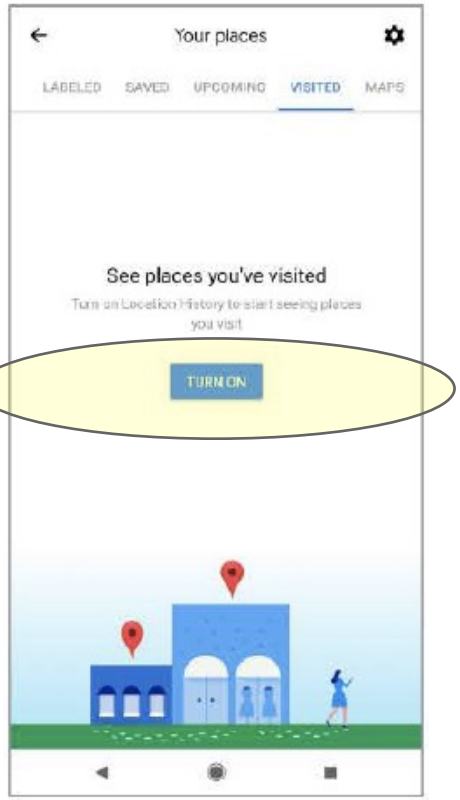
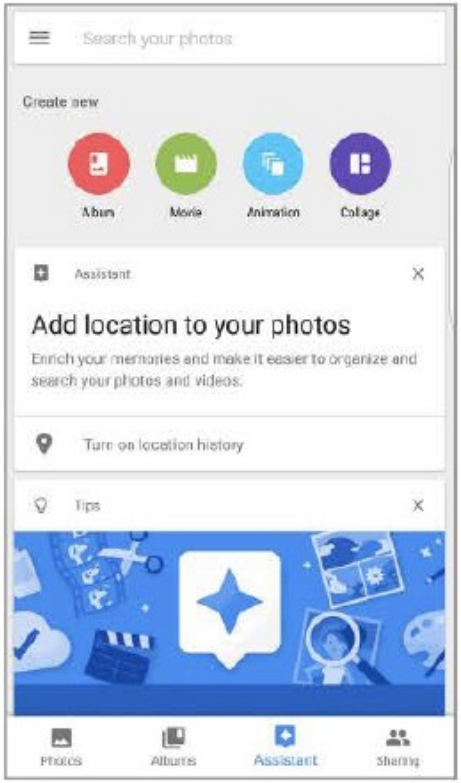
Voluntary?
Need to Find Out:

1. **Date/Time LH Enabled**
   - Subpoena the "Account Change History"
   - Do Google "Takeout"
2. **Method of Opt-In**
   - Forensic examination
3. **Appearance of the "Consent Flow"**
   - Has changed over time
   - Enabled by default in 2015





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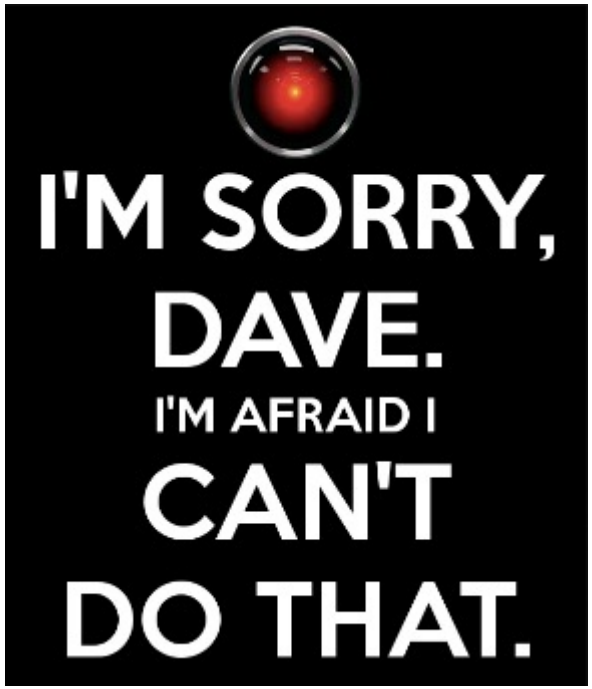
LH Will Still Track, Even If…

- You're not using the phone
- You don't use/delete the app
- You delete your Location History



Property Interest

- Location History data = personal "papers and effects"

BRIEF OF AMICUS CURIAE GOOGLE LLC

A. Google "Location History" Is Not A Business Record, But A Journal Of A User's Location And Travels That Is Created, Edited, And Stored By And For The Benefit Of Google Users Who Have Opted Into The Service

Google "Location History" information is essentially a history or journal that Google users can choose to create, edit, and store to record their movements and travels. Google's users

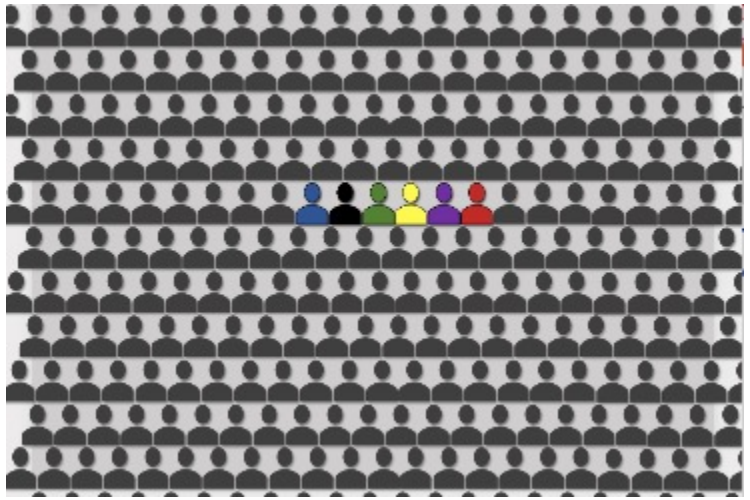
Overbreadth

(Lack of Probable Cause)

Scope of the search:

- Requires searching **all accounts** with LH enabled
- 1/3 of Google users have LH enabled

  = 592 million users (2018)
- Epic dragnet → general warrant



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Overbreadth

Location History in October 2018

3. In October 2018, there were approximately 592 million daily active users of Location History worldwide. Roughly one-third of all active Google users had Location History enabled on their accounts.

- Decl. of Emily Mosely, ***People v. Dawes*** **(Cal. Sup. Ct.)**

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Generalizations ≠ PC

Furthermore, based on my training, experience and consulting with other investigators, I know the most common types of cell phones used by the vast majority of the people in the United States are smart phones, which are capable of mobile voice calling and data communications, as well as internet connectivity and software application management. Based on my training and experience I know the two most commonly used smart phone operating systems are iOS, which run on Apple iPhones, and Android, which run on the mobile devices of various manufacturers.

I know that when an Android device user first turns on a new Android device they are prompted to add a Google account. The Android account creation process generates an account and email account using the familiar gmail.com format. Based on my training and experience, I know it is impossible for an Android device user to install applications from the Google Play Store without a Google account. Therefore, it is nearly certain that a person using an Android device has an associated Google account.

Overbreadth

- Evidence there was a cell phone involved with LH enabled?
  - Need a factual nexus between the crime & the data searched/seized
- Or pure conjecture?
  - Affidavits full of statistics & generalizations (that don't even pan out)

85% x 40.5% x 33% = **11%**

FAIR PROBABILITY?

85% have a smartphone

40.5% Android

1/3 LH enabled

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Overbreadth

- Generalizations ≠ PC
- **0 x 0 x 0 = 0**
- No probable cause to search or seize anyone's data

Particularity (Discretion) – Step 1

1) What to search?
   - Location History ("Sensorvault")
   - Web & App Activity
   - Google Location Accuracy
2) What to seize?
   - **How to count** responsive devices?

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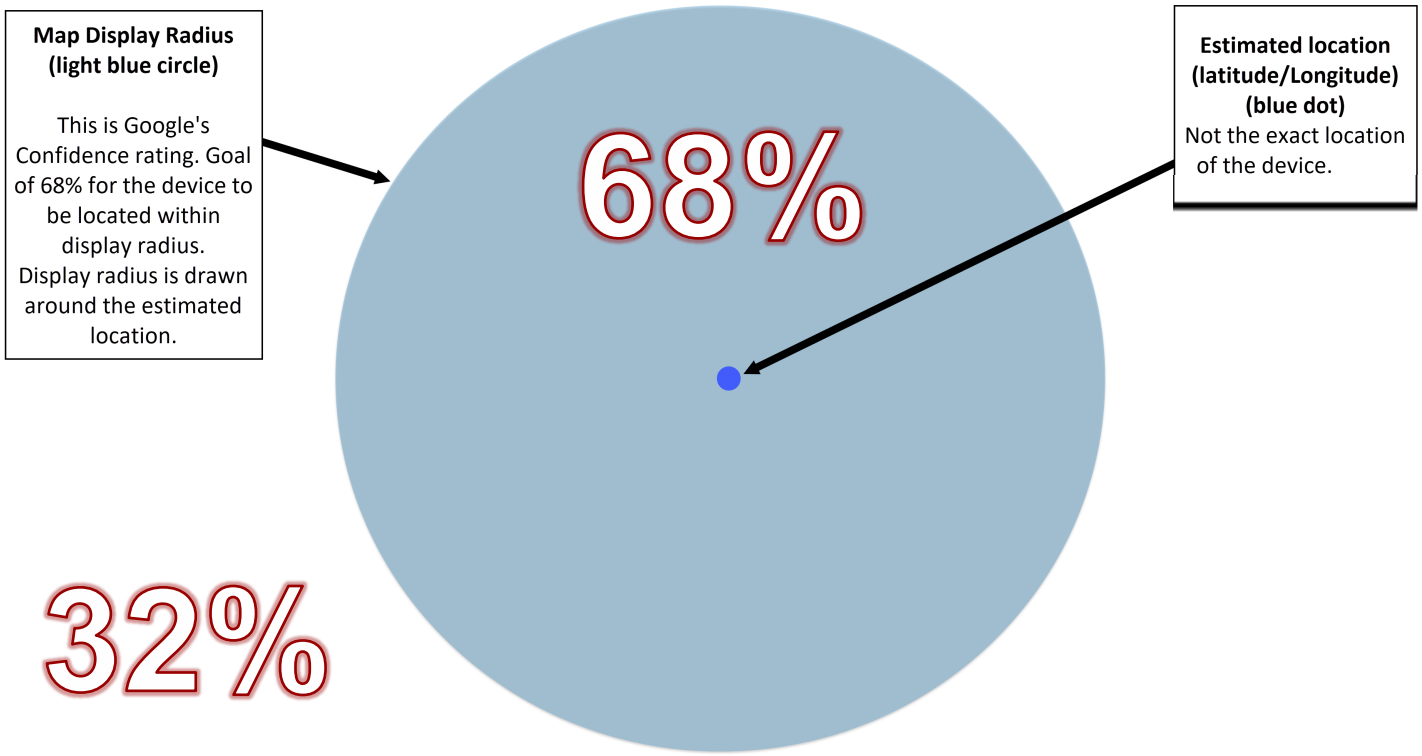
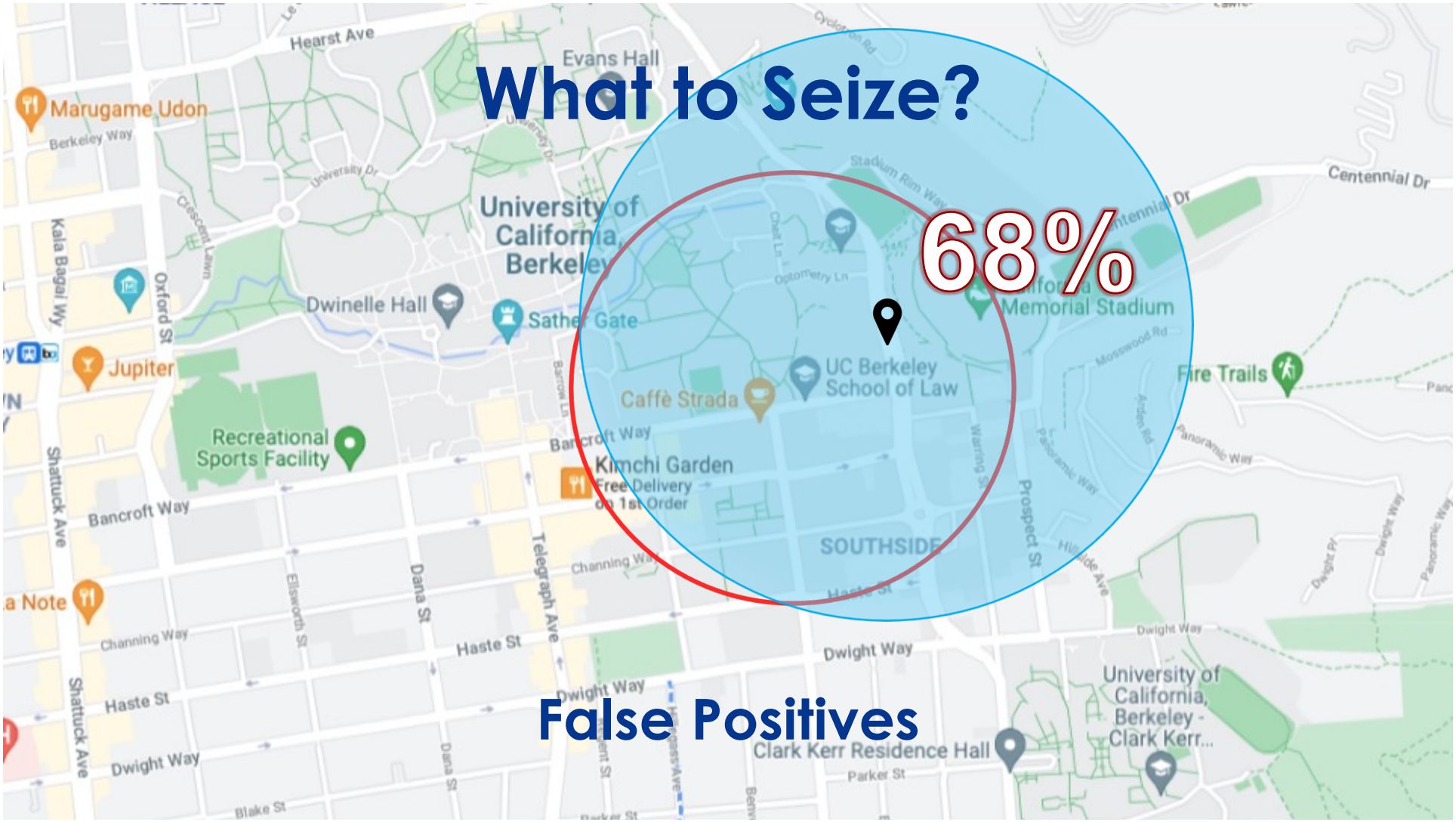
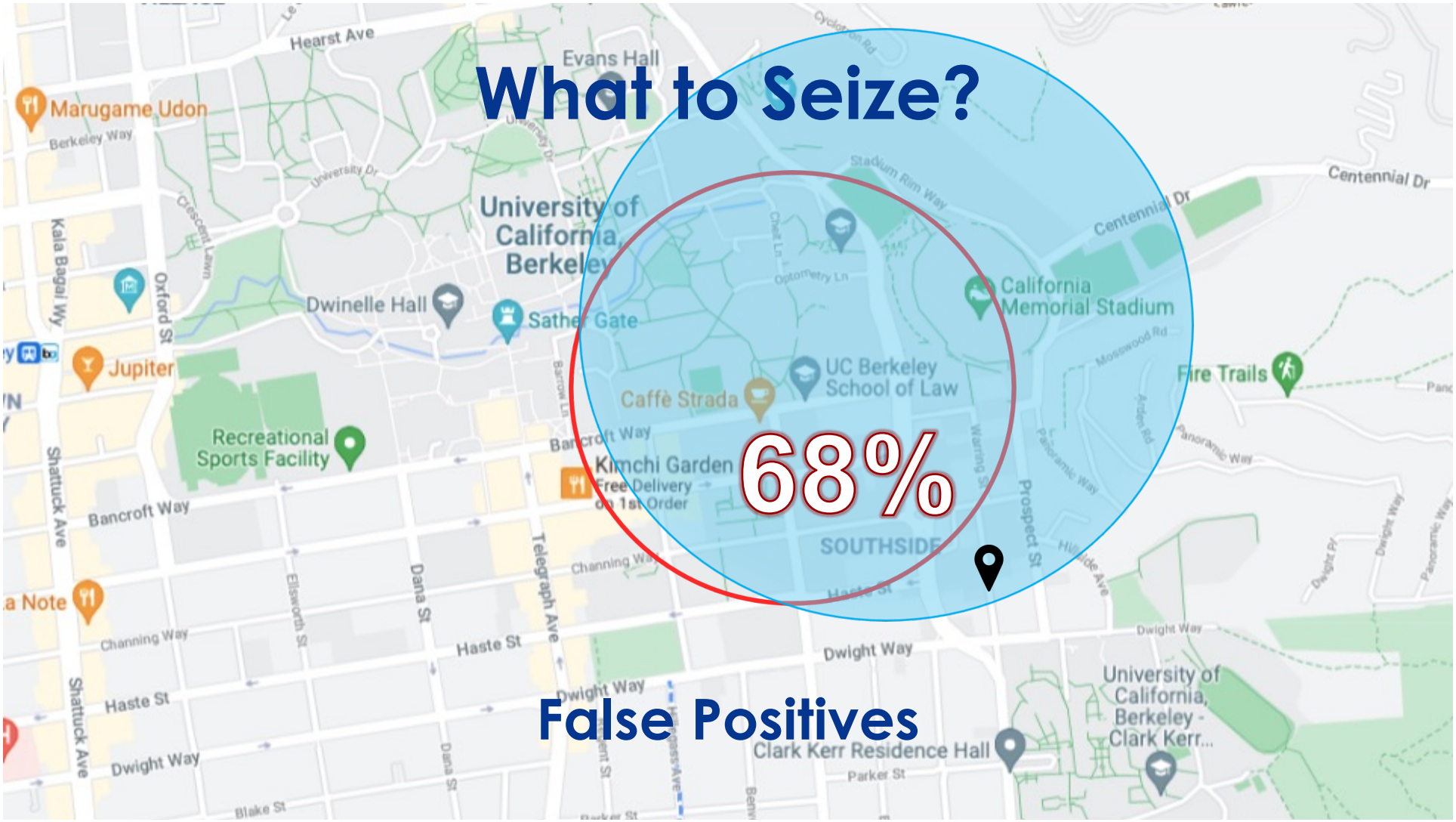
July 11, 2018
July 13, 2018
July 15, 2018
Cliffside Park
Fairview
North Bergen
Guttenberg
West New York
Secaucus
College Point
North Bergen
Weehawken
Union City
Weehawken Twp
East Elmhurst
Flushing
Long Island City
Jackson Heights
Corona
Elmhurst
Sunnyside
Hoboken
Rego Park
Maspeth
Forest Hills
New York
Middle Village
Ridgewood
What to Search?
Location History
vs.
Web & App Activity
vs.
Google Location Accuracy

What to Seize?

Understanding the "Display Radius"




What to Seize?
68%
False Positives
Hearst Ave
Evans Hall
Marugame Udon
Berkeley Way
University of California, Berkeley
Dwinelle Hall
Sather Gate
Jupiter
Recreational Sports Facility
Kala Bagai Wy
Oxford St
Shattuck Ave
Bancroft Way
Kimchi Garden
Free Delivery on 1st Order
UC Berkeley School of Law
Caffè Strada
Memorial Stadium
Centennial Dr
Fire Trails
SOUTHSIDE
Prospect St
Telegraph Ave
Dana St
Ellsworth St
Channing Way
Haste St
Dwight Way
Clark Kerr Residence Hall
Parker St
University of California, Berkeley - Clark Kerr...
Blake St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Dana St
Ellsworth St
Channing Way
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Dwight Way
Parker St
Clark Kerr Residence Hall
University of California, Berkeley - Clark Kerr...
Blake St

What to Seize?
32%
False Positives
Hearst Ave
Evans Hall
Marugame Udon
Berkeley Way
University of California, Berkeley
Dwinelle Hall
Sather Gate
Jupiter
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UC Berkeley School of Law
California Memorial Stadium
Centennial Dr
Stadium Rim Way
Optometry Ln
Mosswood Rd
Fire Trails
Panoramic Way
Prospect St
SOUTHSIDE
Channing Way
Telegraph
Ellsworth St
Haste St
Dwight Way
Clark Kerr Residence Hall
Parker St
University of California, Berkeley - Clark Kerr...
Blake St

What to Seize?
How to count?
Hearst Ave
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Marugame Udon
Berkeley Way
University of California, Berkeley
Dwinelle Hall
Sather Gate
Jupiter
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Clark Kerr Residence Hall
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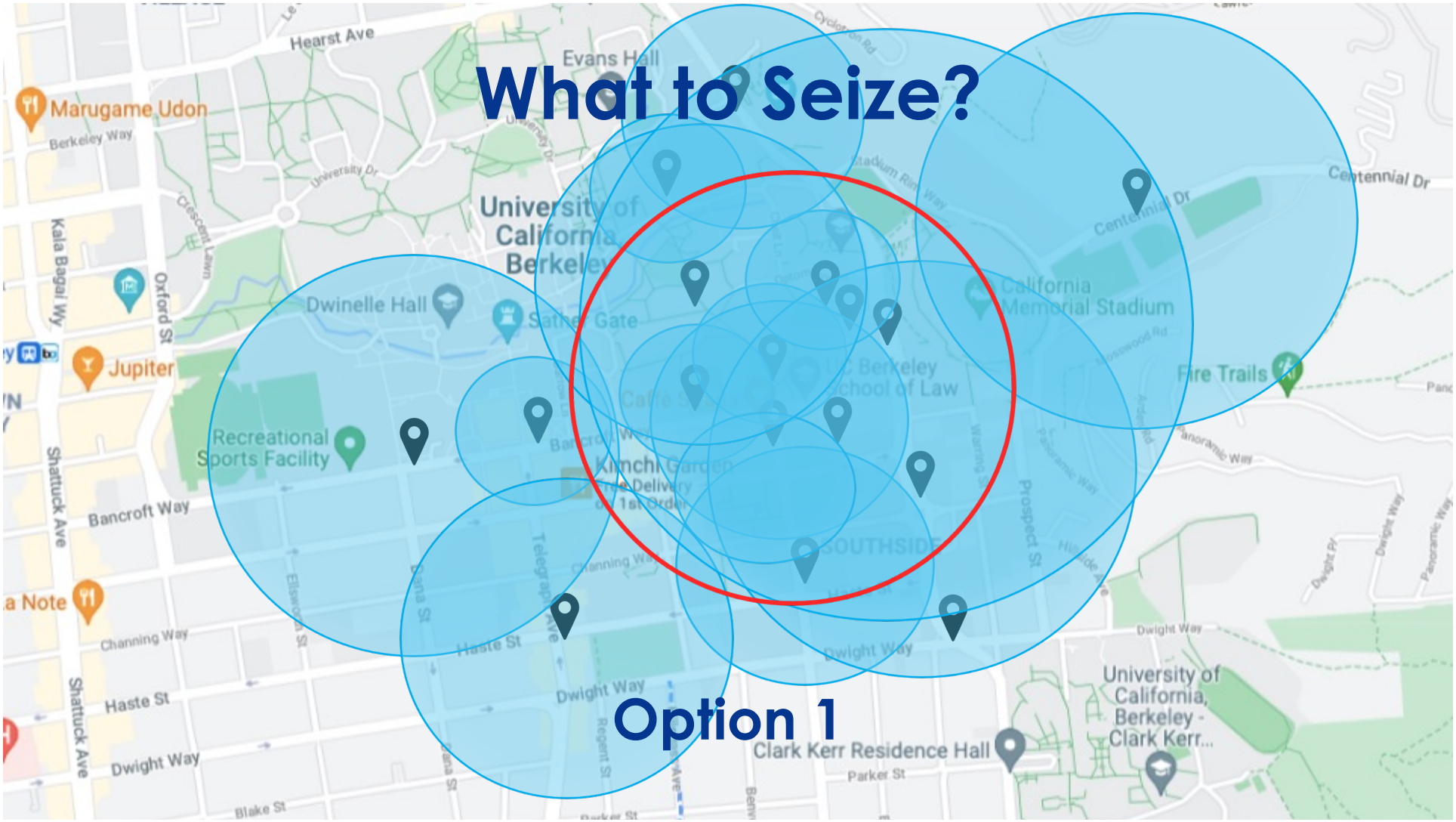
Blake St
University of California, Berkeley - Clark Kerr...


What to Seize?
Option 1
Hearst Ave
Evans Hall
Marugame Udon
Berkeley Way
University of California, Berkeley
Dwinelle Hall
Sather Gate
Jupiter
Oxford St
Kala Bagai Wy
Crescent Lawn
University Dr
Centennial Dr
California Memorial Stadium
Fire Trails
Recreational Sports Facility
Bancroft Way
Shattuck Ave
Channing Way
Haste St
Dwight Way
Telegraph Ave
Prospect St
Panoramic Way
Clark Kerr Residence Hall
Parker St
Blake St
University of California, Berkeley - Clark Kerr...

What to Seize?
Option 2
Hearst Ave
Evans Hall
Marugame Udon
Berkeley Way
University of California, Berkeley
Dwinelle Hall
Sather Gate
Jupiter
Recreational Sports Facility
Kimchi Garden
Free Delivery on 1st Order
California Memorial Stadium
Centennial Dr
Fire Trails
UC Berkeley School of Law
SOUTHSIDE
Bancroft Way
Channing Way
Haste St
Dwight Way
Telegraph Ave
Dana St
Shattuck Ave
Oxford St
Kala Bagai Wy
Prospect St
Clark Kerr Residence Hall
Parker St
University of California, Berkeley - Clark Kerr...
Blake St

What to Seize?

Option 3

Particularity (Discretion) – Steps 2 & 3

- **Explicitly** up to the police whose data gets searched & seized in Steps 2 & 3.
- No judge

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"Anonymized" Data?

- Step 1 & 2 data is "anonymized" – but it really isn't.
- Identifiers are static, tied to individual accounts, & can be cross-referenced over multiple searches.
- **Can subpoena subscriber info for (some) "anonymized" identifiers**.
- Trivial to identify people from Step 2 data.

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"Anonymized" Data?

[39] The fact that data points obtained during Steps 1 and 2 are anonymized when Google reports them does not completely quell this Court's concerns about the invasiveness of this warrant. Even "anonymized" location data—from innocent people—can reveal astonishing glimpses into individuals' private lives when the Government collects data across even a one or two hour period. As noted above, during the March hearing, McInvaille identified three anonymous accounts captured within the geofence—"Mr. Blue," "Mr. Green," and "Ms. Yellow." (ECF No. 201, at 63–71.)

U.S. v. Chatrie, 2022 WL 628905 (E.D.Va. 2022)

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No Good Faith

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- Google & DOJ created the 3-step process, produced a "go-by"
- Seems designed to save face for Google & not freak out judges
- But omits critical information & masks true scope of the search (consider *Franks*)
- Not reasonable to believe there's PC to search 592 million
- General warrant – invalid on its face, void

United States v. Chatrie
2022 WL 628905 (E.D.Va. 2022)

Held: Geofence warrant violated the Fourth Amendment because the Government lacked "particularized probable cause as to every Google user in the geofence."

Overbreadth:

- "[W]arrants, like this one, that authorize the search of every person within a particular area **must establish probable cause to search every one of those persons**."

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United States v. Chatrie
2022 WL 628905 (E.D.Va. 2022)

Particularity:

- "Steps 2 and 3—undertaken with no judicial review whatsoever—**improperly provided law enforcement and Google with unbridled discretion** to decide which accounts will be subject to further intrusions."

Briefs & Transcripts: **www.nacdl.org/Chatrie**

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(Some) Geofence Opinions

- *In re Search Warrant Application for Geofence Location Data Stored at Google*, 2020 WL 6343084 (N.D. Ill. 2020)
- *In re Information Stored at Premises Controlled by Google*, 481 F. Supp. 3d 730 (N.D. Ill. 2020)
- *In re Information Stored at Premises Controlled by Google*, 2020 WL 5491763 (N.D. Ill. July 8, 2020)
- *In re Search of Information that is Stored at the Premises Controlled by Google*, 542 F. Supp. 3d 1153 (D. Kan. 2021)
- *In re Search of Information That Is Stored at the Premises Controlled by Google*, 2021 WL 6196136 (D.D.C. 2021)
- *Commonwealth v. Fleischmann*, No. 2072CR00046 (Ma. Sup. Ct. Aug. 31, 2021)
- *In re Search of Information Stored at the Premises Controlled by Google*, No. KM-2022-79 (Va. Cir. Ct., Feb. 24, 2022)
- *State v. Dawes*, No. 19002022 (CA Superior Ct., Sept. 30, 2022)
- *United States v. Rhine*, No. CR 21-0687 (RC), 2023 WL 372044 (D.D.C. Jan. 24, 2023)
- *People v. Meza*, 312 Cal. Rptr. 3d 1 (Ct. App. 2023), *review denied* (Aug. 16, 2023)
- *Wells v. State*, No. 05-21-00855-CR, 2023 WL 5424313 (Tex. App. Aug. 23, 2023)

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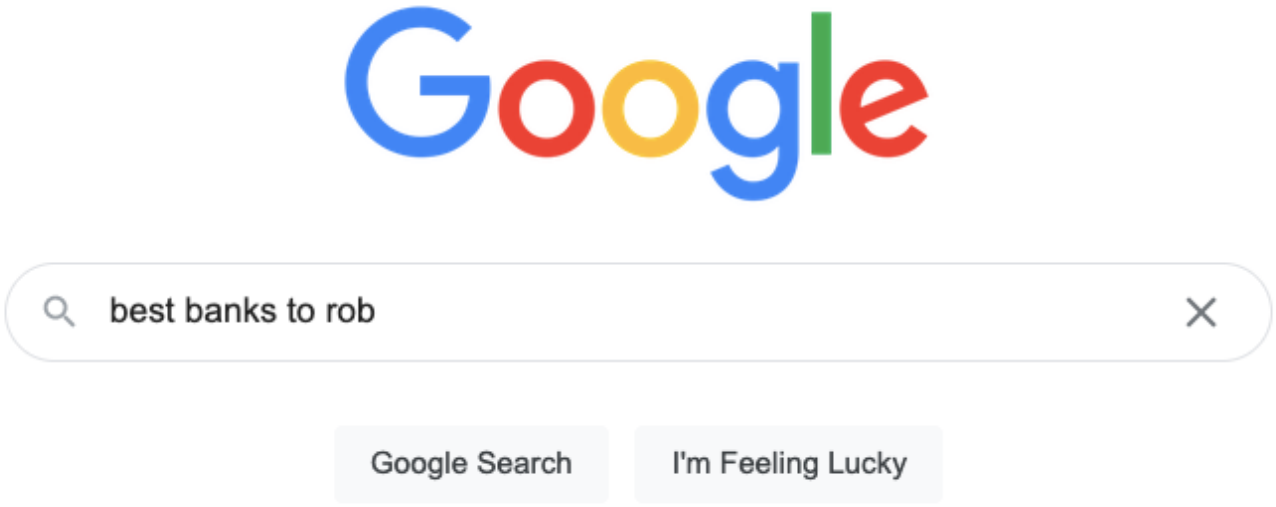
Keyword Warrants



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Keyword Warrants

For any Google accounts that conducted a search while using Google Services (i.e., Google Chrome, Google Maps, or any other Google service) using any one or more of the following the search terms:

- **"5312 Truckee"**
- **"5312 Truckee St"**
- **"5312 Truckee Street"**
- **"5312 N Truckee St"**
- **"5312 N. Truckee St."**
- **"5312 N. Truckee St"**
- **"5312 N Truckee St."**
- **"5312 North Truckee"**
- **"5312 North Truckee Street"**

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Keyword Warrants

2. In particular, this application seeks to obtain information from Google associated with the following search terms, as further described in Attachment A (collectively referred to as the "Google Search Terms") or any other applicable variants of the following search queries that satisfy the below parameters in any order, inclusive of additional search terms:

1) ("[redacted]" OR "[redacted]") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

2) ("[redacted]" OR "[redacted]") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

3) ("motion" OR "pull" OR "victim") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

4) ("low explosives") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

5) ("[redacted]" OR "trigger" OR "[redacted]") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

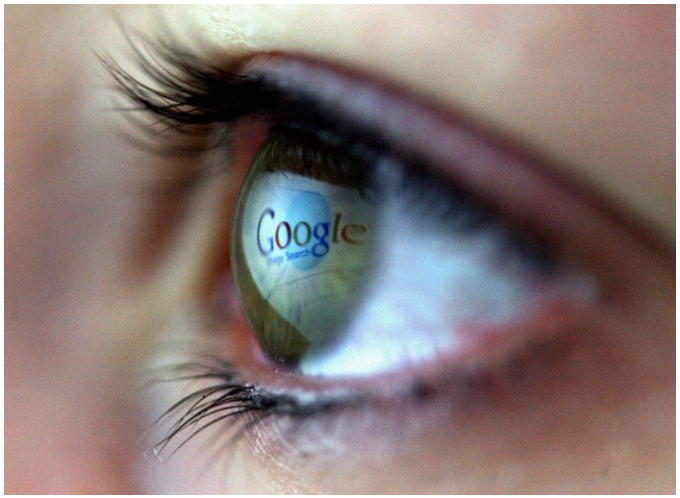
6) ("cardboard" OR "package") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

7) ("fragmentation") AND ("bomb" OR "explosive" OR "ied" OR "explosion" OR "pipebomb" OR "pipe bomb" OR "PVC bomb")

Keyword Warrants

Searches ***<u>everyone</u>*** who ran a search during a given time. **Search & Maps**.

- "Authenticated" (signed-in)
  - ➡ "GAIA ID"
- Not authenticated (not signed-in)
  - ➡ "Browser Cookie ID"



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Billions

4. First, a member of the Google LIS team creates a text-based query (that can include letters, numbers, or characters) based on the requirements of the warrant. That query is then run over the records of searches conducted through Google Search and Maps. It has been reported by Google and publicly that Google Search has more than 1 billion average monthly users, and each day, Google Search receives billions of queries. *See, e.g.*, Alphabet Q4 2015

- Decl. of Nikki Adeli, ***People v. Seymour*** **(Colo. D. Ct.)**

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Keyword Warrant Return

Google creates a “production copy” that is “de-identified”

	A	B	C	D	E	F	G	H	I	J	K	L
1	Time	Country	Subdivisions	IP	Query	Result	Host	Request	Truncated GaiaID	Truncated CookieID	UserAgent	
2	2022-09-19 9:52:04.492341 -0400 EDT			192.168.255.255	123 Main St MA		www.google.com	GET /search?q	20036	0	Mozilla/5.0 (iPhone;	
3	2022-09-19 9:53:54.542342 -0400 EDT	US	US-NY	10.255.255.255	123 Main St Springfield, NY 14141 United States		www.google.com	GET /search?q	60724	0	Mozilla/5.0 (iPhone;	
4	2022-09-19 10:01:04.232568 -0400 EDT	US	US-NJ	2607:fb90:6c3c:780c:c04:fde7:f52c:b55b	123 Main St Union County NJ		www.google.com	GET /search?q	0	5463892	Mozilla/5.0 (iPhone;	
5	2022-09-19 10:02:02.092343 -0400 EDT			2104:db40:6d2c:780c:c04:fde7:f52a:a25b	123 Main St		www.google.com	GET /async/irc	14622	0	Mozilla/5.0 (iPhone;	
6	2022-09-19 10:03:32.145342 -0400 EDT			2104:db40:6d2c:780c:c04:fde7:f52a:a25b	123 Main St		www.google.com	GET /search?q	14622	0	Mozilla/5.0 (iPhone;	
7	2022-09-19 10:04:53.492568 -0400 EDT	US	US-NJ	2607:fb90:6c3c:780c:c04:fde7:f52c:b55b	123 Main St Union County NJ for sale		www.google.com	GET /search?q	0	5463892	Mozilla/5.0 (iPhone;	
8	2022-09-19 10:05:02.492568 -0400 EDT	US	US-NY	10.255.255.255	123 Main St Springfied, NY 14141 United States		www.google.com	GET /search?q	60724	0	Mozilla/5.0 (iPhone;	
9	2022-09-19 10:05:43.112568 -0400 EDT			2104:db40:6d2c:780c:c04:fde7:f52a:a25b	123 Main St Newport		www.google.com	GET /async/irc	0	6471344	Mozilla/5.0 (iPhone;	
10	2022-09-19 10:05:55.672364 -0400 EDT	US	US-MA	172.31.255.255	123 Main St Sheblyville		www.google.com	GET /maps/pr	20036	0	Mozilla/5.0 (iPhone;	

GAIA ID or Browser Cookie ID

Keyword Warrant Return

Google creates a “production copy” that is “de-identified”

	A	B	C	D	E	F	G	H	I	J	K	L
1	Time	Country	Subdivisions	IP	Query	Result	Host	Request	Truncated GaiaID	Truncated CookieID	UserAgent	
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No Geographic Limit

Keyword Warrant Return

Google creates a “production copy” that is “de-identified”

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1	Time	Country	Subdivisions	IP	Query	Result	Host	Request	Truncated GaiaID	Truncated CookieID	UserAgent	
2	2022-09-19 9:52:04.492341 -0400 EDT			192.168.255.255	123 Main St MA		www.google.com	GET /search?q	20036	0	Mozilla/5.0 (iPhone;	
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Queries may contain “other words”

Keyword Warrant Return

Google creates a "production copy" that is "de-identified"

	A	B	C	D	E	F	G	H	I	J	K	L
1	Time	Country	Subdivisions	IP	Query	Result	Host	Request	Truncated GaiaID	Truncated CookieID	UserAgent	
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Full IP Addresses

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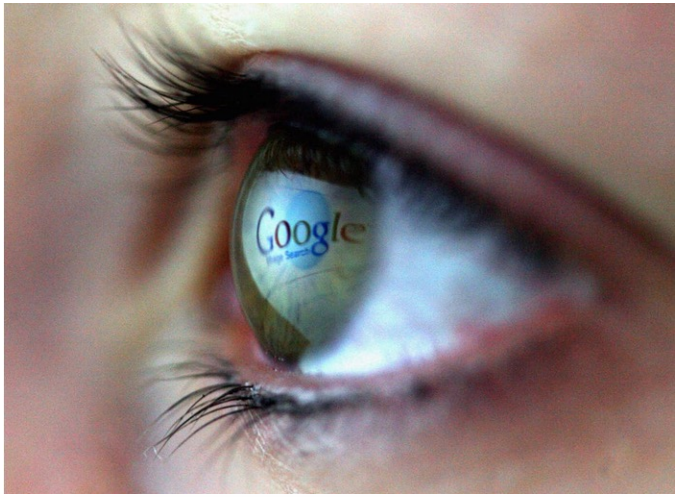
Challenging Keyword Warrants

1. **Fourth Amendment Interest**
   - Reasonable expectation of privacy
   - Property interest
2. **Unconstitutional General Warrant**
   - Overbreadth
   - Lack of particularity
3. **No Good Faith**



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Fourth Amendment Interest

- Expectation of privacy:
  - Search history is some of the most private data that exists.
  - See *Seymour* briefing & EFF amicus

- Property interest:
  - Search History is "account contents"
  - Like photos, emails = private "papers"

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Overbreadth

- No probable cause for even one person's search history
- No probable cause to search billions
- Over-seizure of searches that contain "other words"

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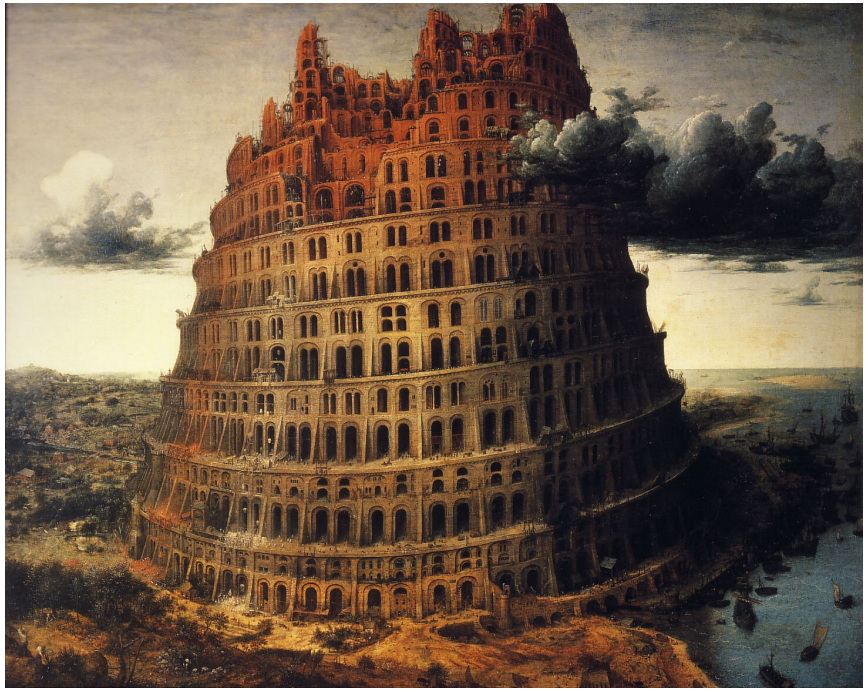
Particularity

- Place to be searched = "1600 Amphitheater Parkway"?
- Fails to identify individual accounts
- Digital equivalent of a billion-story apartment building

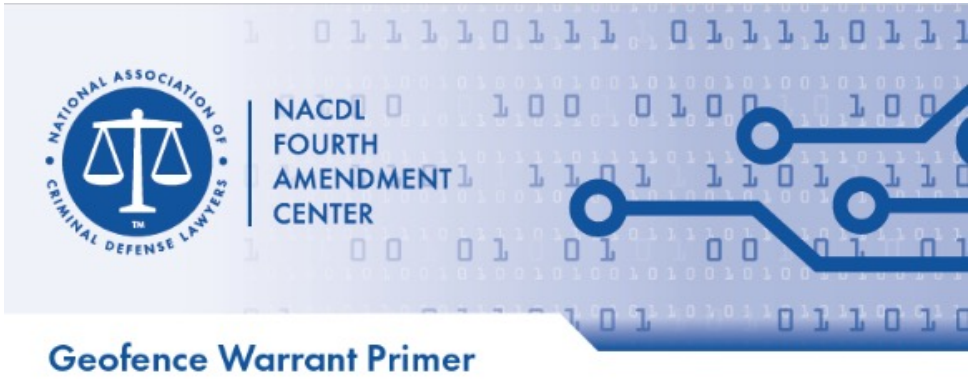


Resources

- Briefs, Transcripts, Google Materials:

  https://www.nacdl.org/Content/Reverse-Search-Warrants

- Geofence Primer



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