Exploiting Your Digital Footprint

Addy Moran & Vidya Murthy

Wednesday, April 15, 2020

Disclaimer

All information in this presentation is for educational purposes only. Neither Raytheon, nor the presenters suggest or condone any of the methods mentioned in this presentation. Our emphasis is on security awareness and being able to defend from multi-faceted attacks. Raytheon accepts no liability, express or implied, in any matter related to this presentation.

About Us

Vidya Murthy

Raytheon Intern

Graduate Student at Carnegie Mellon University, Information Security

Fun Fact: This hacker’s been hacked

Addy Moran

Raytheon Employee for 3+ years

Colorado State University, Bachelor’s in Comp Sci

Certified Ethical Hacker

Fun Fact: This hacker’s been scammed

What is a Digital Footprint?

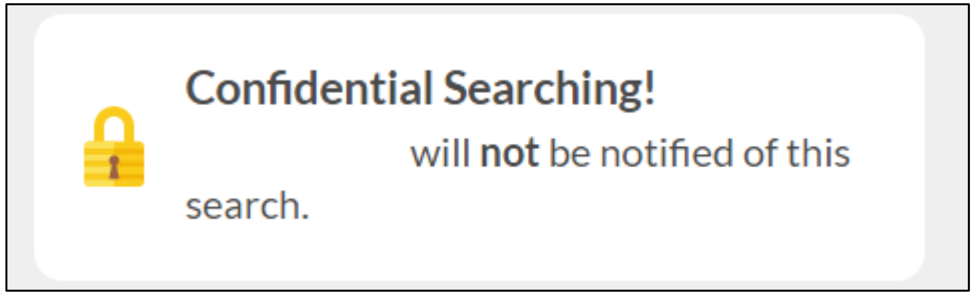
"A digital footprint is a trail of data you create while using the Internet. It includes the websites you visit, emails you send, and information you submit to online services."

Source: https://techterms.com/definition/digital_footprint

Pixabay/geralt

Example Sources of a Digital Footprint

- LinkedIn
- Facebook
- Voting Records
- Court Records
- Twitter
- Dating Apps
- Satellite Images
- Google Maps
- Venmo
- Criminal Records (for a fee)



Confidential Searching!

will **not** be notified of this search.

Black Box Test

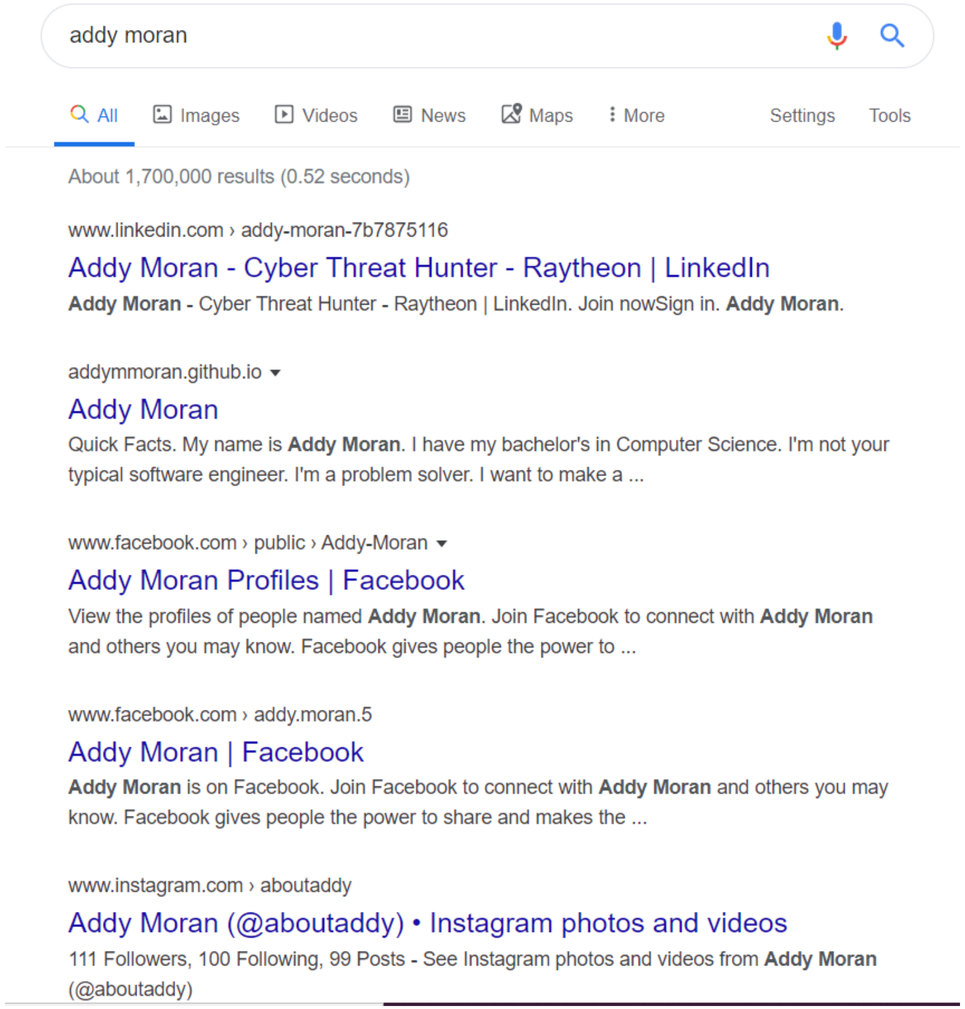
Goal: Compromise target's accounts

Motivation: Personal, financial, reputational

Pixabay/TheDigitalArtist

Data Gathering

Raytheon



addy moran

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About 1,700,000 results (0.52 seconds)

www.linkedin.com › addy-moran-7b7875116
Addy Moran - Cyber Threat Hunter - Raytheon | LinkedIn
Addy Moran - Cyber Threat Hunter - Raytheon | LinkedIn. Join nowSign in. Addy Moran.

addymmoran.github.io
Addy Moran
Quick Facts. My name is Addy Moran. I have my bachelor's in Computer Science. I'm not your typical software engineer. I'm a problem solver. I want to make a ...

www.facebook.com › public › Addy-Moran
Addy Moran Profiles | Facebook
View the profiles of people named Addy Moran. Join Facebook to connect with Addy Moran and others you may know. Facebook gives people the power to ...

www.facebook.com › addy.moran.5
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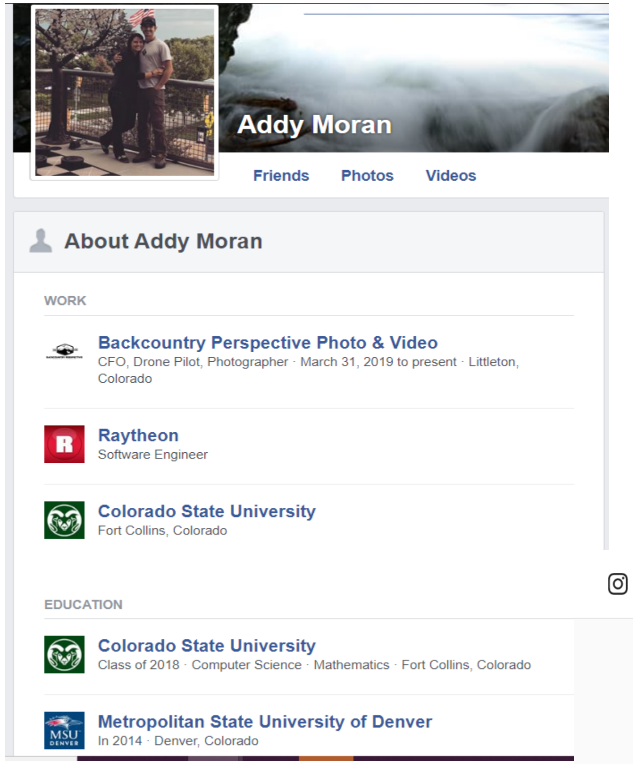
www.instagram.com › aboutaddy
Addy Moran (@aboutaddy) • Instagram photos and videos
111 Followers, 100 Following, 99 Posts - See Instagram photos and videos from Addy Moran (@aboutaddy)



Addy Moran

Friends · Photos · Videos

About Addy Moran

WORK

Backcountry Perspective Photo & Video
CFO, Drone Pilot, Photographer · March 31, 2019 to present · Littleton, Colorado

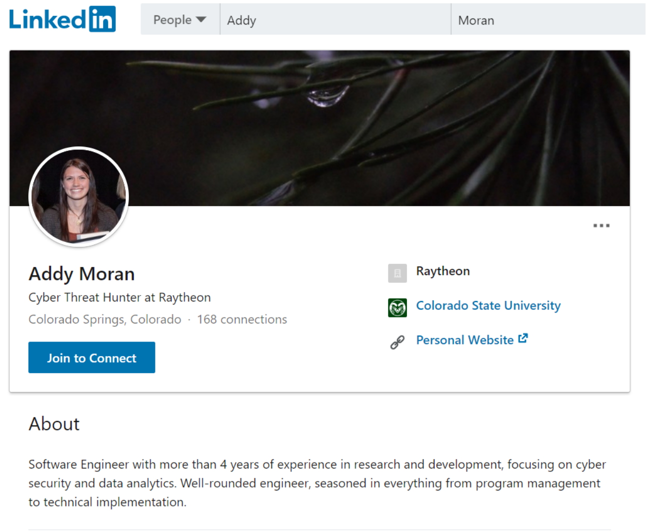
Raytheon
Software Engineer

Colorado State University
Fort Collins, Colorado

EDUCATION

Colorado State University
Class of 2018 · Computer Science · Mathematics · Fort Collins, Colorado

Metropolitan State University of Denver
In 2014 · Denver, Colorado



LinkedIn

People ▾ · Addy · Moran

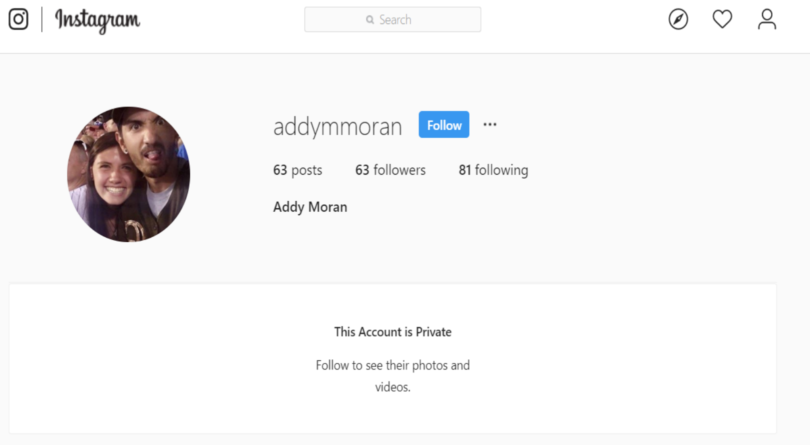
Addy Moran
Cyber Threat Hunter at Raytheon
Colorado Springs, Colorado · 168 connections

Join to Connect

Raytheon
Colorado State University
Personal Website

About

Software Engineer with more than 4 years of experience in research and development, focusing on cyber security and data analytics. Well-rounded engineer, seasoned in everything from program management to technical implementation.



Instagram

Search

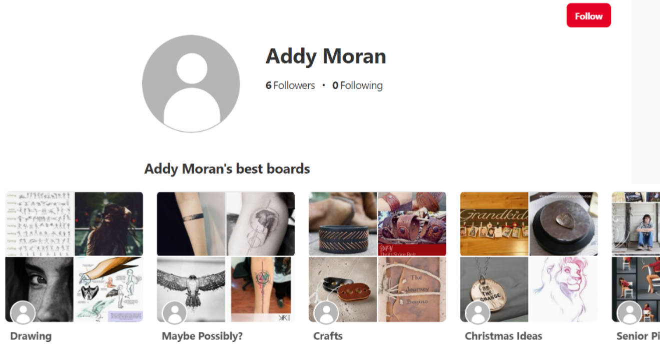
addymmoran · Follow

63 posts · 63 followers · 81 following

Addy Moran

This Account is Private

Follow to see their photos and videos.



Follow

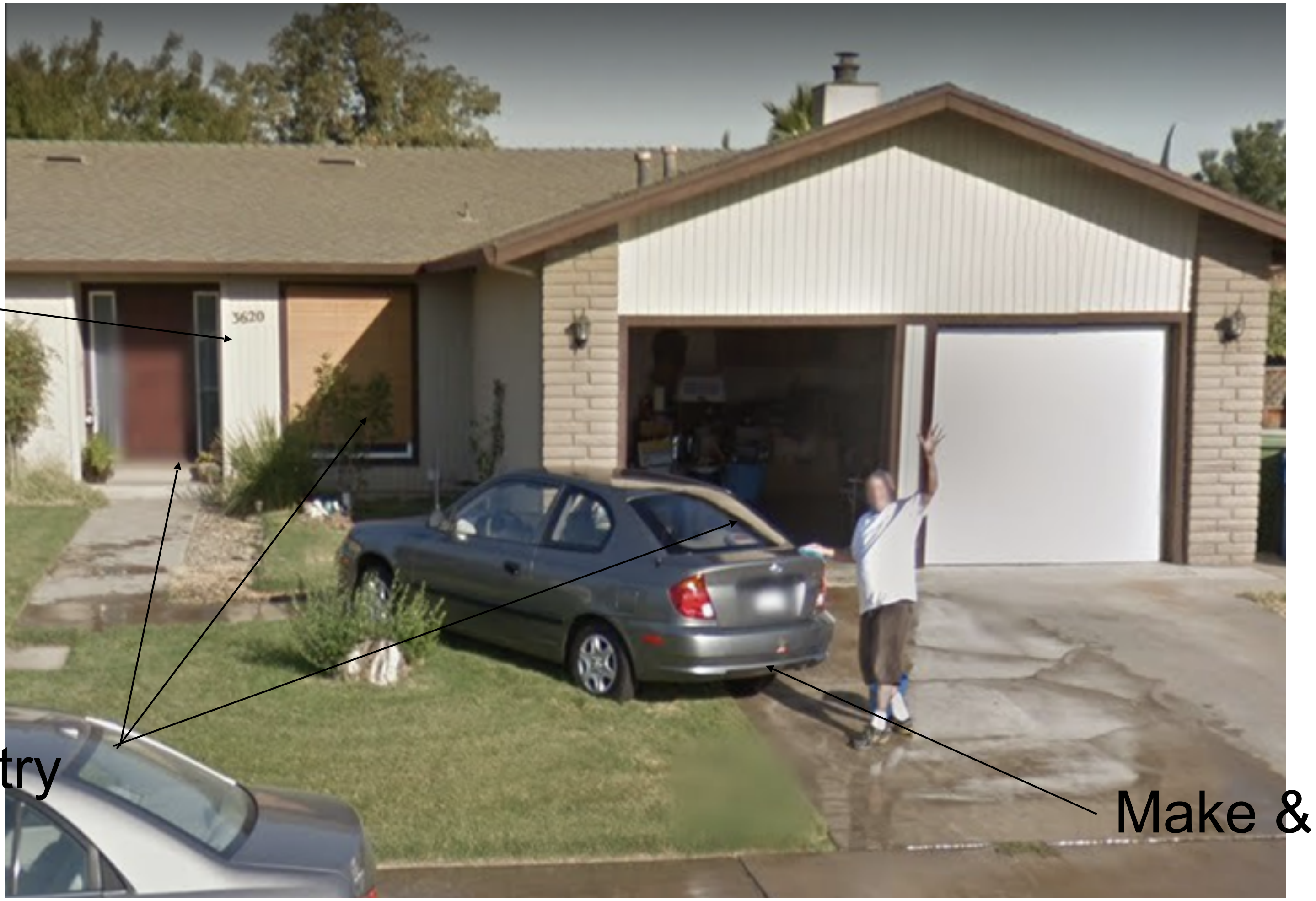
Addy Moran
6 Followers • 0 Following

Addy Moran's best boards

Drawing · Maybe Possibly? · Crafts · Christmas Ideas · Senior Pic Ideas

Approved for Public Release

Data Gathering

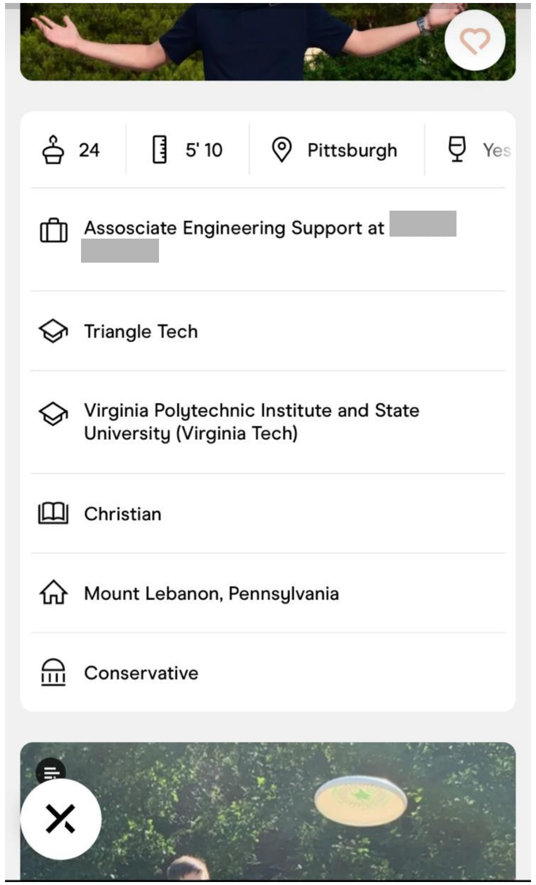


Address

Points of Entry

Make & Model of Car

Data Gathering



24 | 5' 10 | Pittsburgh | Yes

Assosciate Engineering Support at [redacted]

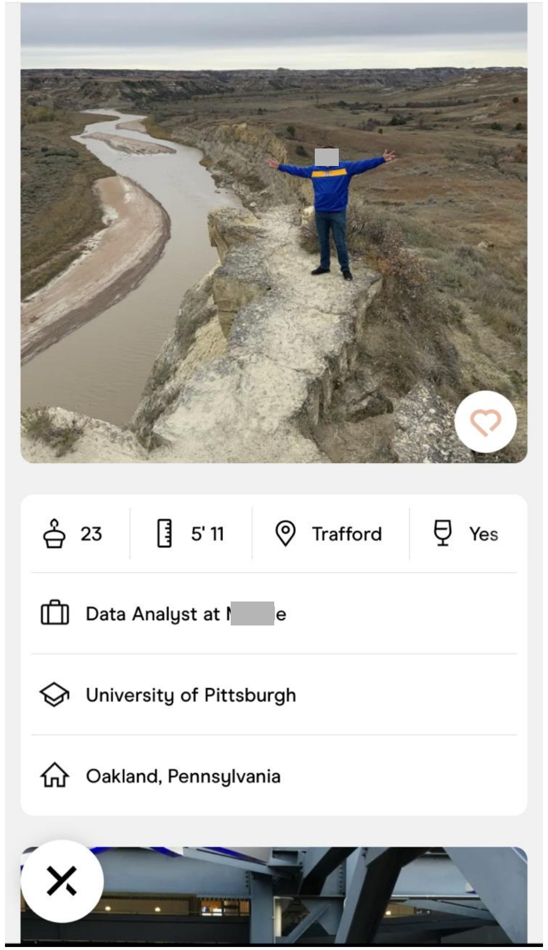
Triangle Tech

Virginia Polytechnic Institute and State University (Virginia Tech)

Christian

Mount Lebanon, Pennsylvania

Conservative

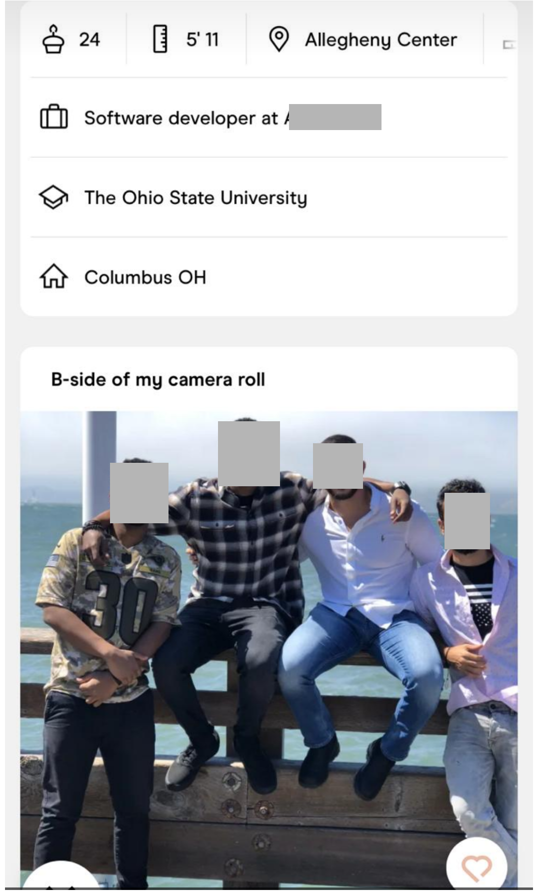


23 | 5' 11 | Trafford | Yes

Data Analyst at [redacted]e

University of Pittsburgh

Oakland, Pennsylvania



24 | 5' 11 | Allegheny Center

Software developer at [redacted]

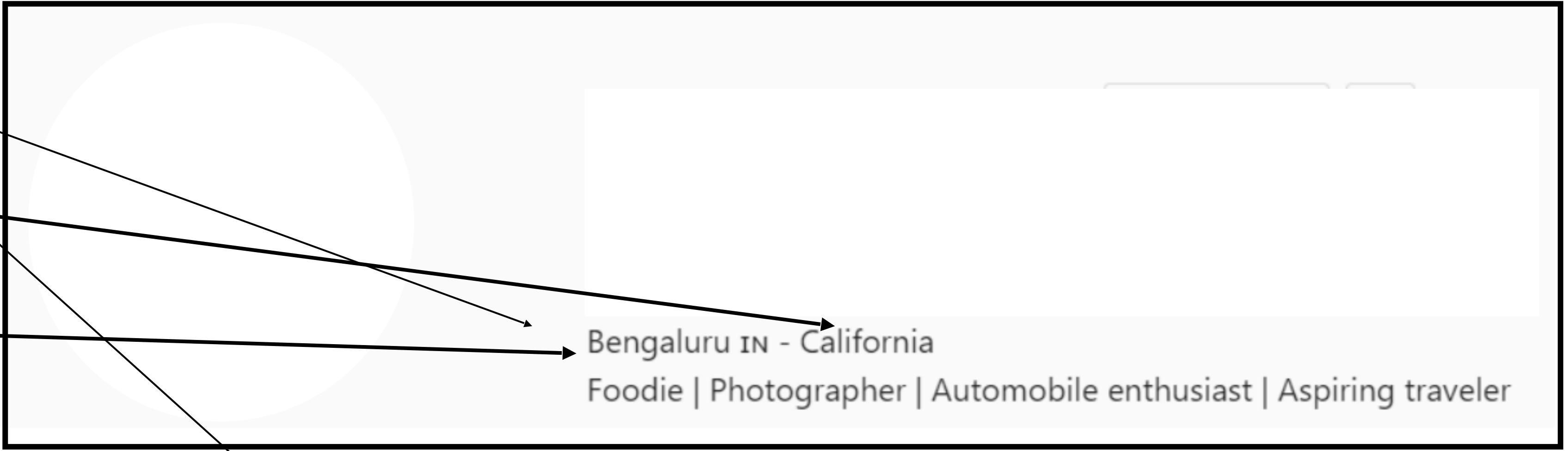
The Ohio State University

Columbus OH

B-side of my camera roll

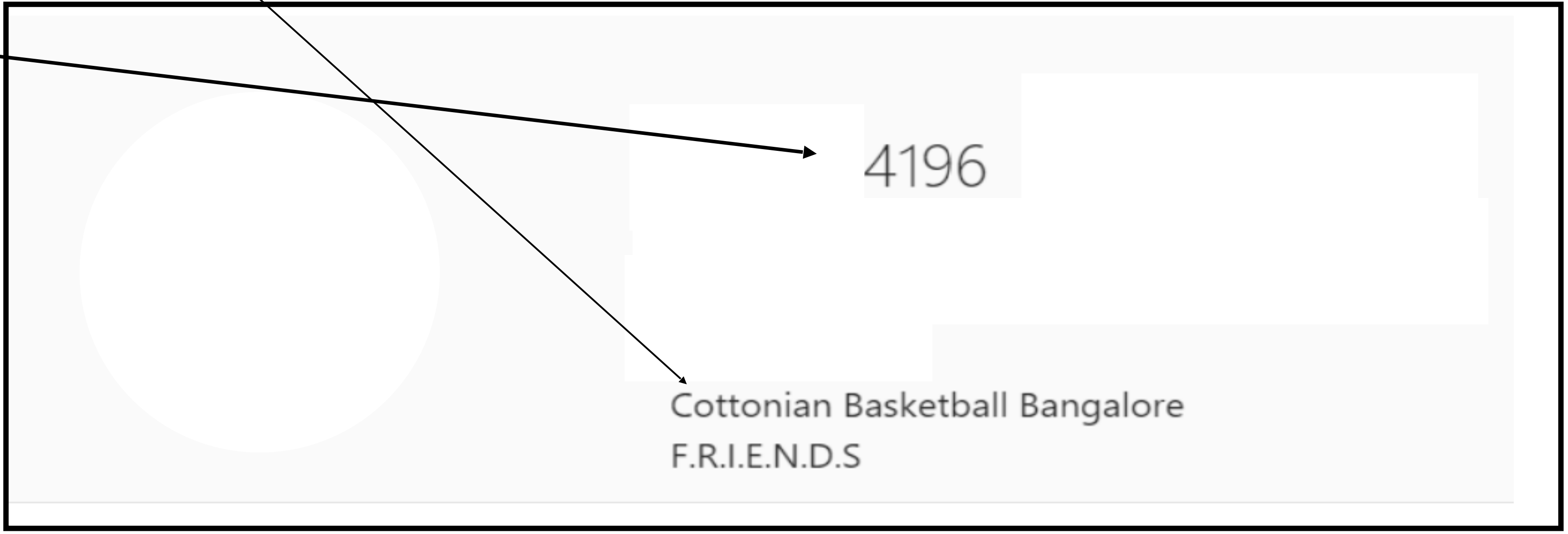
Data Gathering

- Things of interest
- Place of residence
- Place of birth
- Birthdays



Bengaluru IN - California

Foodie | Photographer | Automobile enthusiast | Aspiring traveler



4196

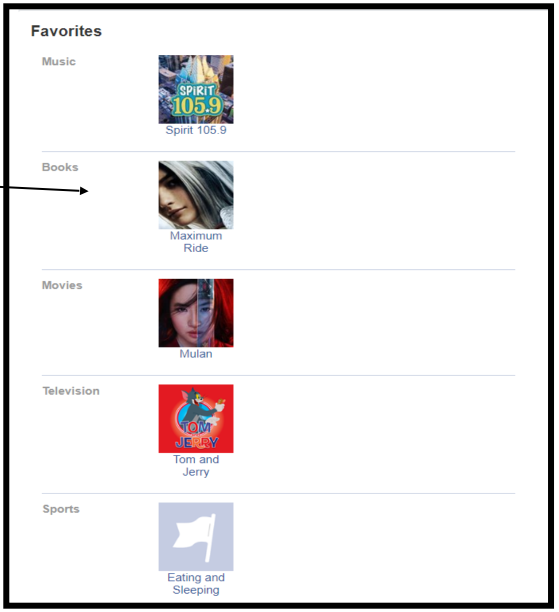
Cottonian Basketball Bangalore

F.R.I.E.N.D.S

Option 1: Reset Password Using Security Questions

- What is your favorite book?
- What is the name of the road you grew up on?
- What is your mother’s maiden name?
- What is your favorite food?
- What city were you born in?
- What was the first company that you worked for?
- Where did you go to college?
- What was the name of your first/current/ favorite pet?
- Where did you meet your spouse?
- Where is your favorite place to vacation?

From StumbleForward (2012)



Favorites

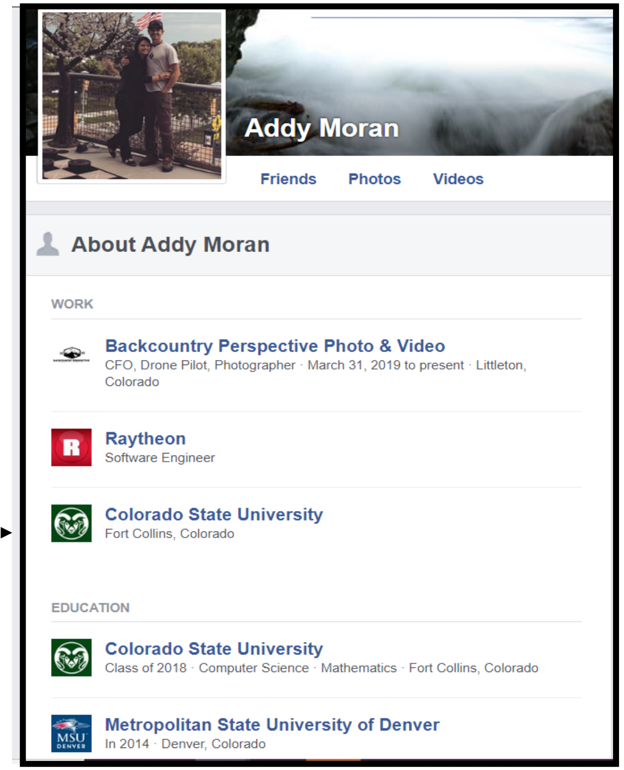
Music: Spirit 105.9

Books: Maximum Ride

Movies: Mulan

Television: Tom and Jerry

Sports: Eating and Sleeping



Addy Moran

Friends · Photos · Videos

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Raytheon
Software Engineer

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Fort Collins, Colorado

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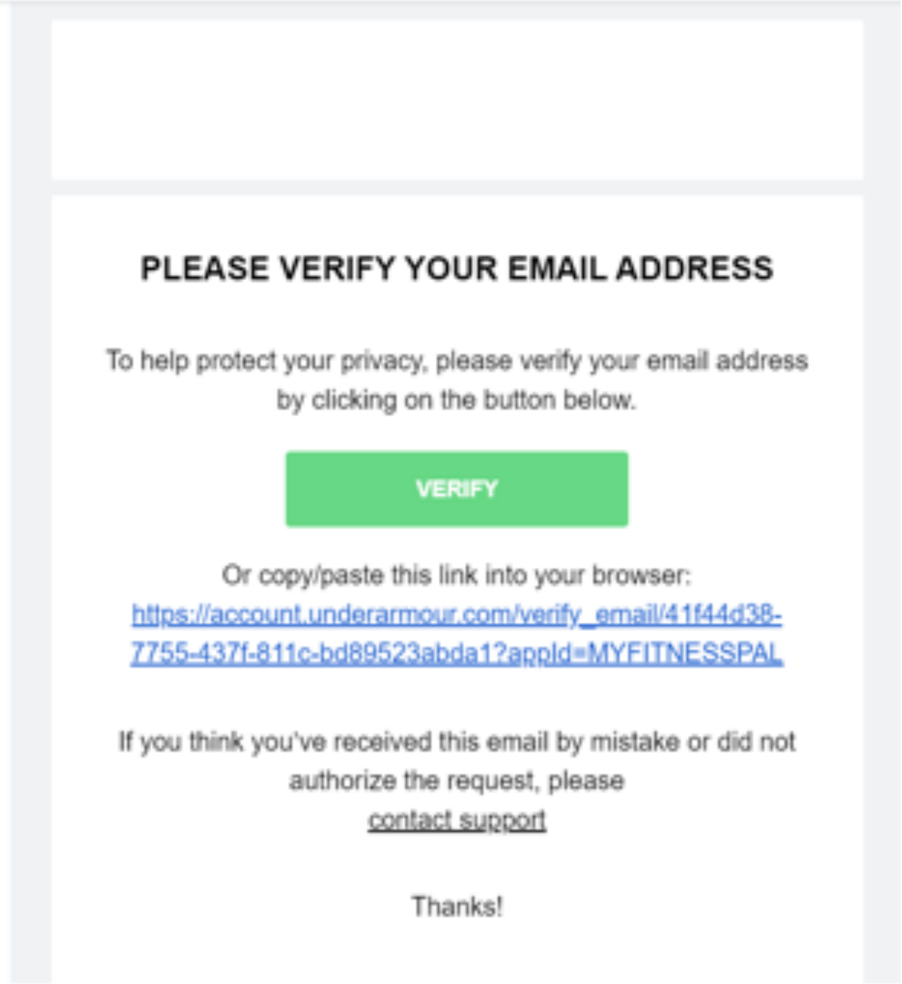
Metropolitan State University of Denver
In 2014 · Denver, Colorado

Option 2: Spear Phishing for Account Information



PLEASE VERIFY YOUR EMAIL ADDRESS

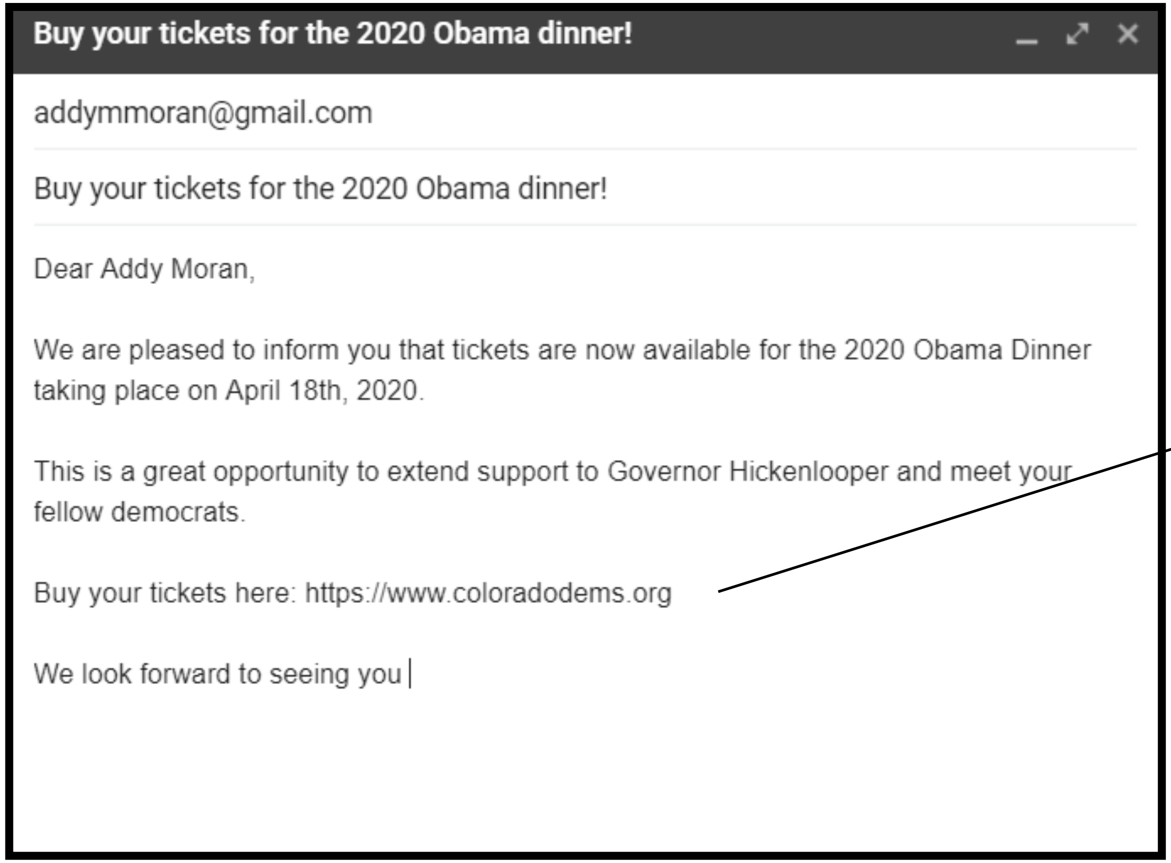
To help protect your privacy, please verify your email address by clicking on the button below.

Or copy/paste this link into your browser:
https://account.underarmour.com/verify_email/41f44d38-7755-437f-811c-bd89523abda1?appId=MYFITNESSPAL

If you think you've received this email by mistake or did not authorize the request, please
contact support

Thanks!

Option 3: Spear Phishing for Monetary Gains



Buy your tickets for the 2020 Obama dinner!

addymmoran@gmail.com

Buy your tickets for the 2020 Obama dinner!

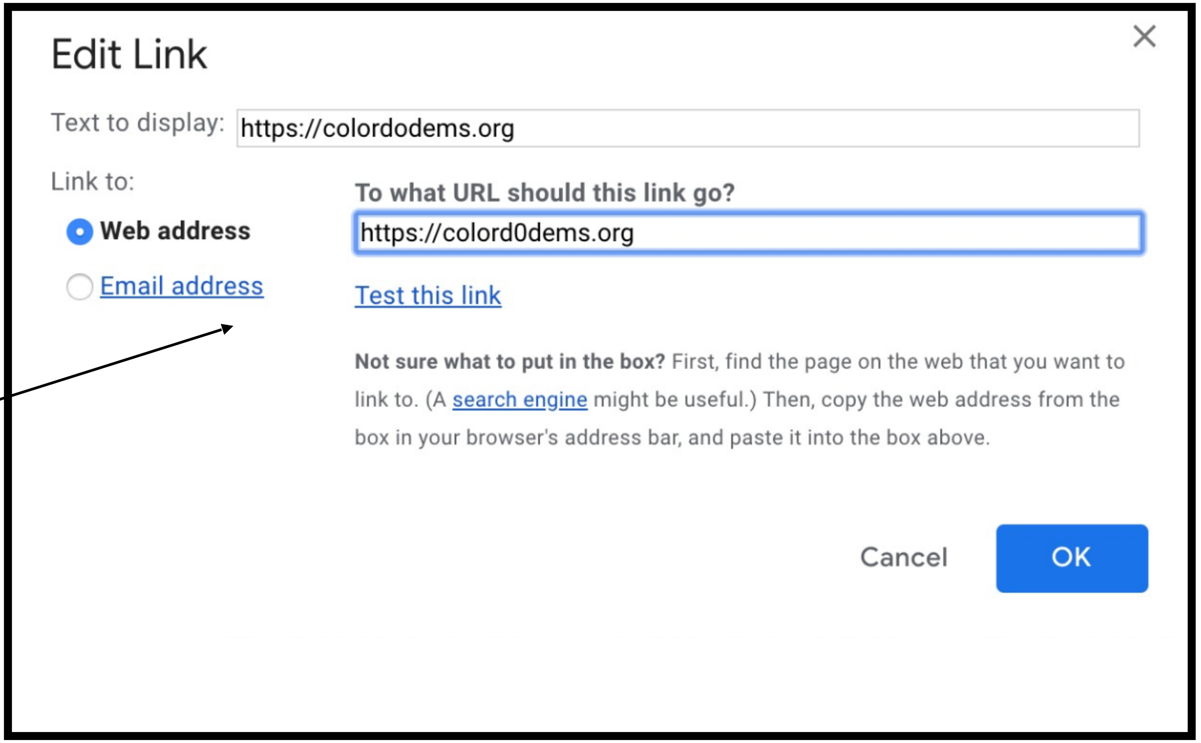
Dear Addy Moran,

We are pleased to inform you that tickets are now available for the 2020 Obama Dinner taking place on April 18th, 2020.

This is a great opportunity to extend support to Governor Hickenlooper and meet your fellow democrats.

Buy your tickets here: https://www.coloradodems.org

We look forward to seeing you



Edit Link

Text to display: https://colordodems.org

Link to:

● Web address

○ Email address

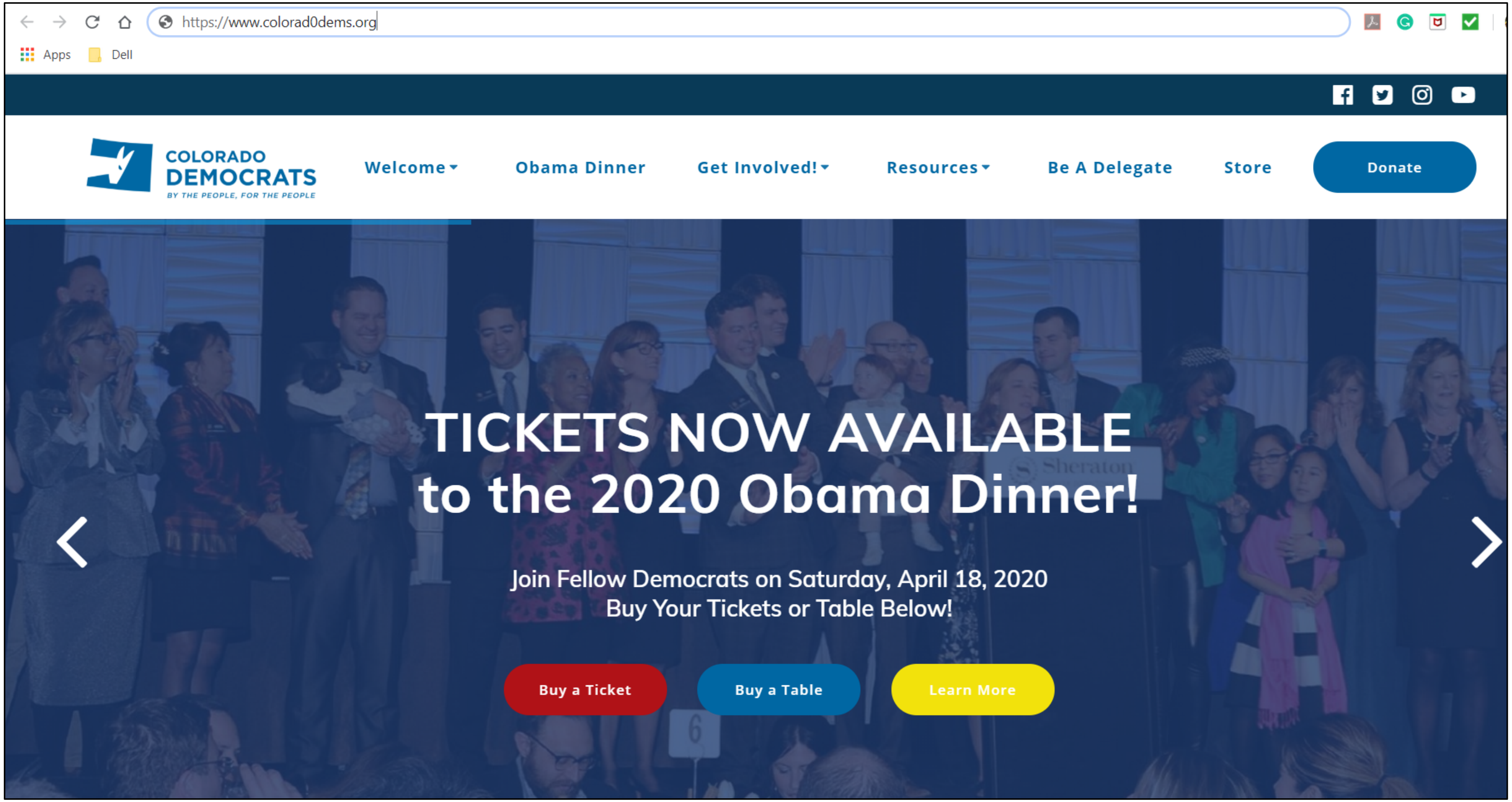
To what URL should this link go?

https://colord0dems.org

Test this link

Not sure what to put in the box? First, find the page on the web that you want to link to. (A search engine might be useful.) Then, copy the web address from the box in your browser's address bar, and paste it into the box above.

Option 3: Spear Phishing for Monetary Gains

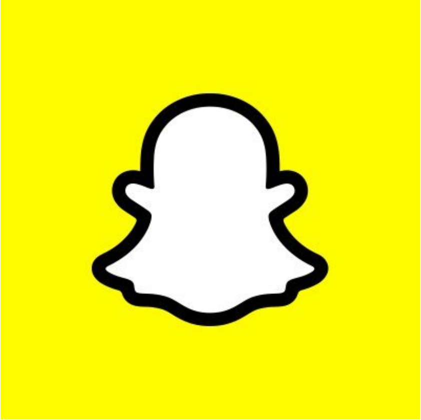


https://www.colorad0dems.org

TICKETS NOW AVAILABLE to the 2020 Obama Dinner!

Join Fellow Democrats on Saturday, April 18, 2020
Buy Your Tickets or Table Below!

Ammunition for an Insider Threat



venmo

myspace®
a place for friends

LinkedIn

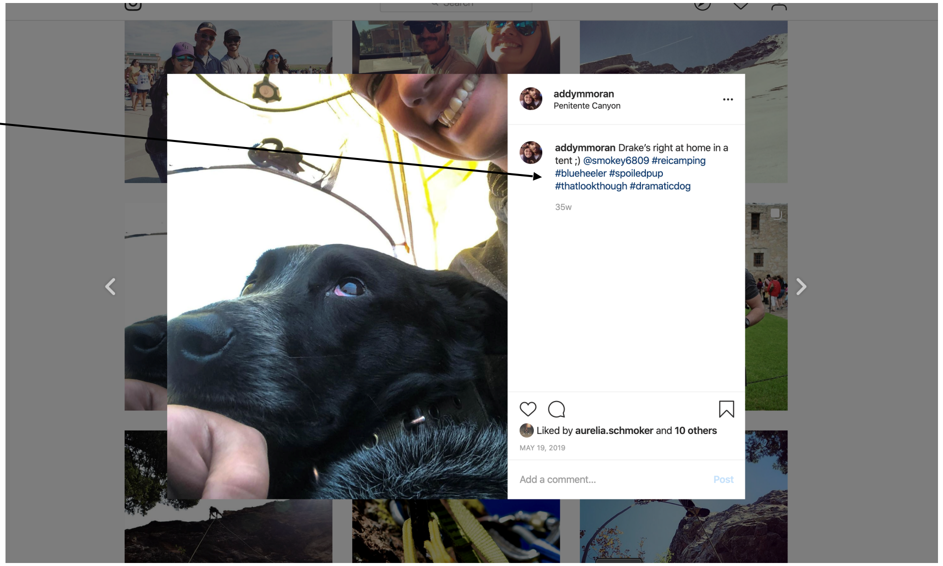
Exploiting “Being Friends” on Social Media

Top 10 Security Questions:

- What is your favorite book?
- What is the name of the road you grew up on?
- What is your mother’s maiden name?
- What was the name of your first/current/ favorite pet?
- What was the first company that you worked for?
- Where did you meet your spouse?
- Where did you go to high school/college?
- What is your favorite food?
- What city were you born in?
- Where is your favorite place to vacation?

From StumbleForward (2012)

goodreads



addymmoran
Penitente Canyon

addymmoran Drake’s right at home in a tent ;) @smokey6809 #reicamping #blueheeler #spoiledpup #thatlookthough #dramaticdog

35w

Liked by aurelia.schmoker and 10 others

MAY 19, 2019

Exploiting “Being Friends” on Social Media

Top 10 Security Questions:

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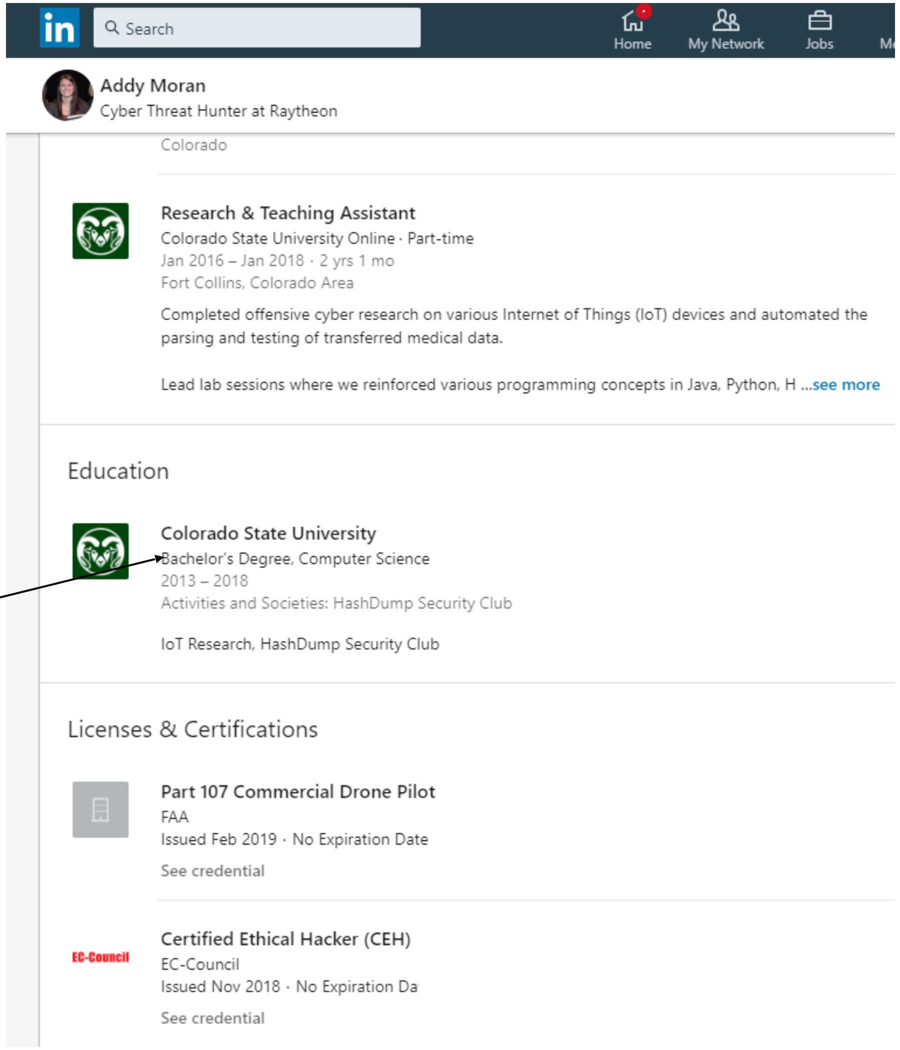


Addy Moran
Cyber Threat Hunter at Raytheon

Colorado

Research & Teaching Assistant
Colorado State University Online · Part-time
Jan 2016 – Jan 2018 · 2 yrs 1 mo
Fort Collins, Colorado Area

Completed offensive cyber research on various Internet of Things (IoT) devices and automated the parsing and testing of transferred medical data.

Lead lab sessions where we reinforced various programming concepts in Java, Python, H ...see more

Education

Colorado State University
Bachelor's Degree, Computer Science
2013 – 2018
Activities and Societies: HashDump Security Club

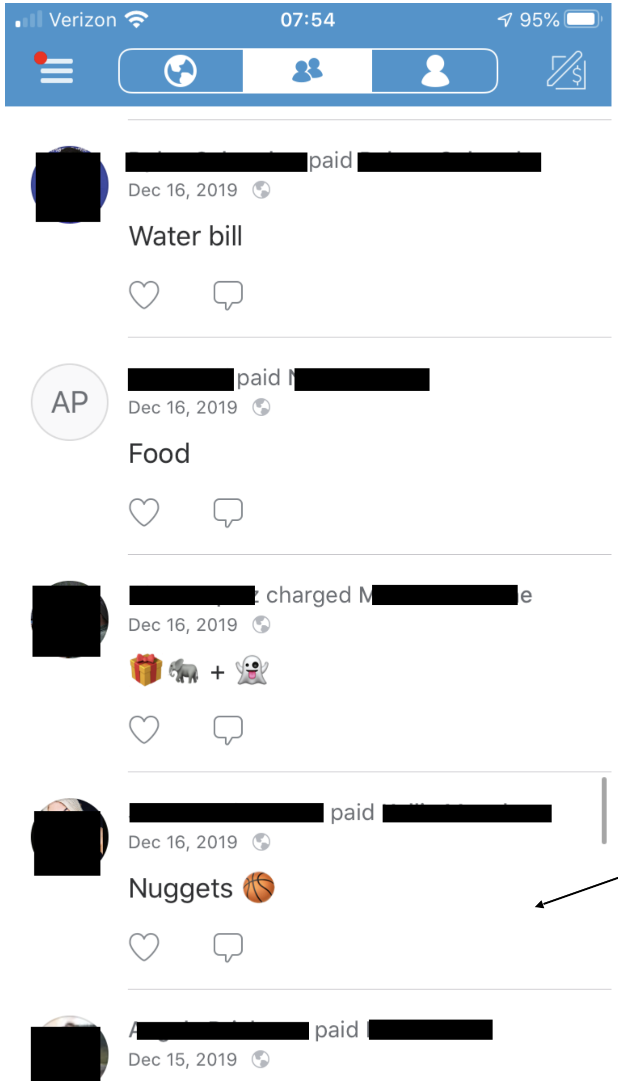
IoT Research, HashDump Security Club

Licenses & Certifications

Part 107 Commercial Drone Pilot
FAA
Issued Feb 2019 · No Expiration Date
See credential

Certified Ethical Hacker (CEH)
EC-Council
Issued Nov 2018 · No Expiration Da
See credential

Unconventional Sources of Information



[redacted] paid [redacted]
Dec 16, 2019
Water bill

[redacted] paid [redacted]
Dec 16, 2019
Food

[redacted] charged [redacted]
Dec 16, 2019
🎁🐘 + 👻

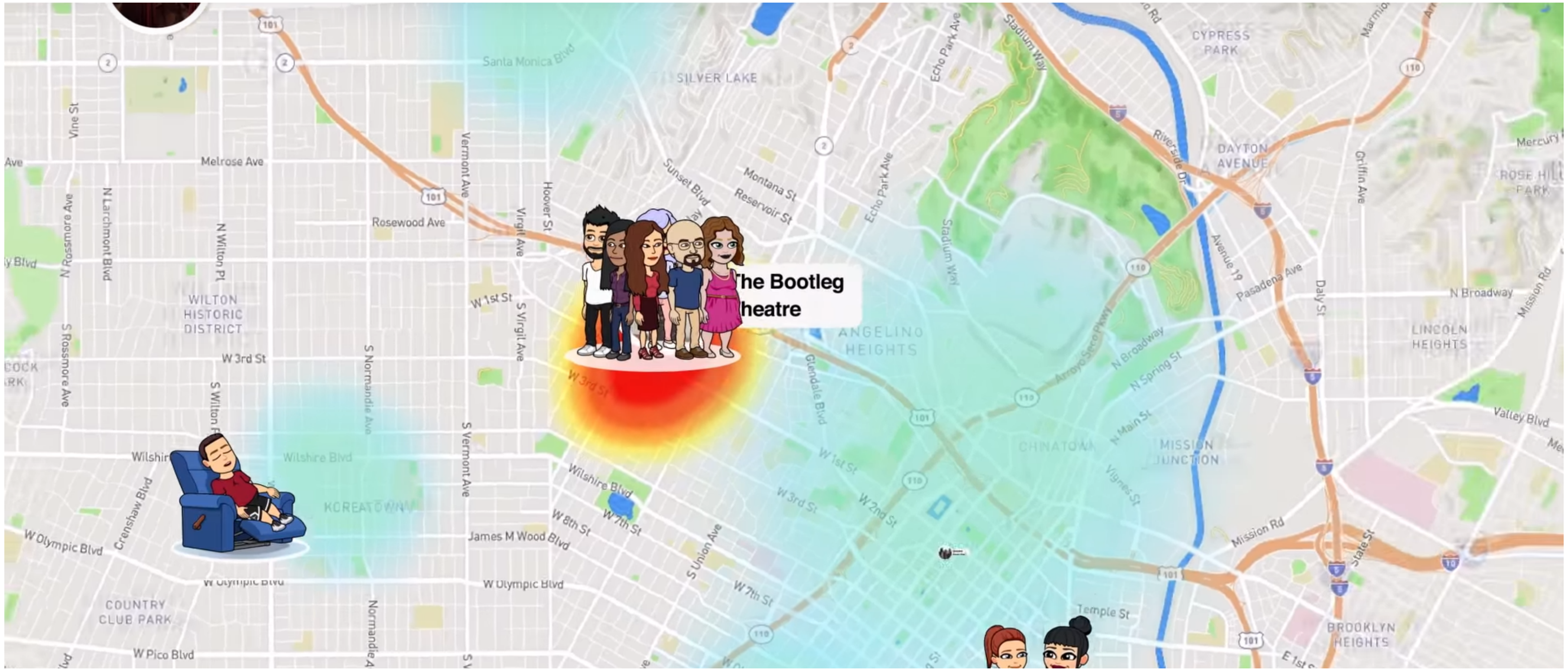
[redacted] paid [redacted]
Dec 16, 2019
Nuggets 🏀

[redacted] paid [redacted]
Dec 15, 2019

Roommates

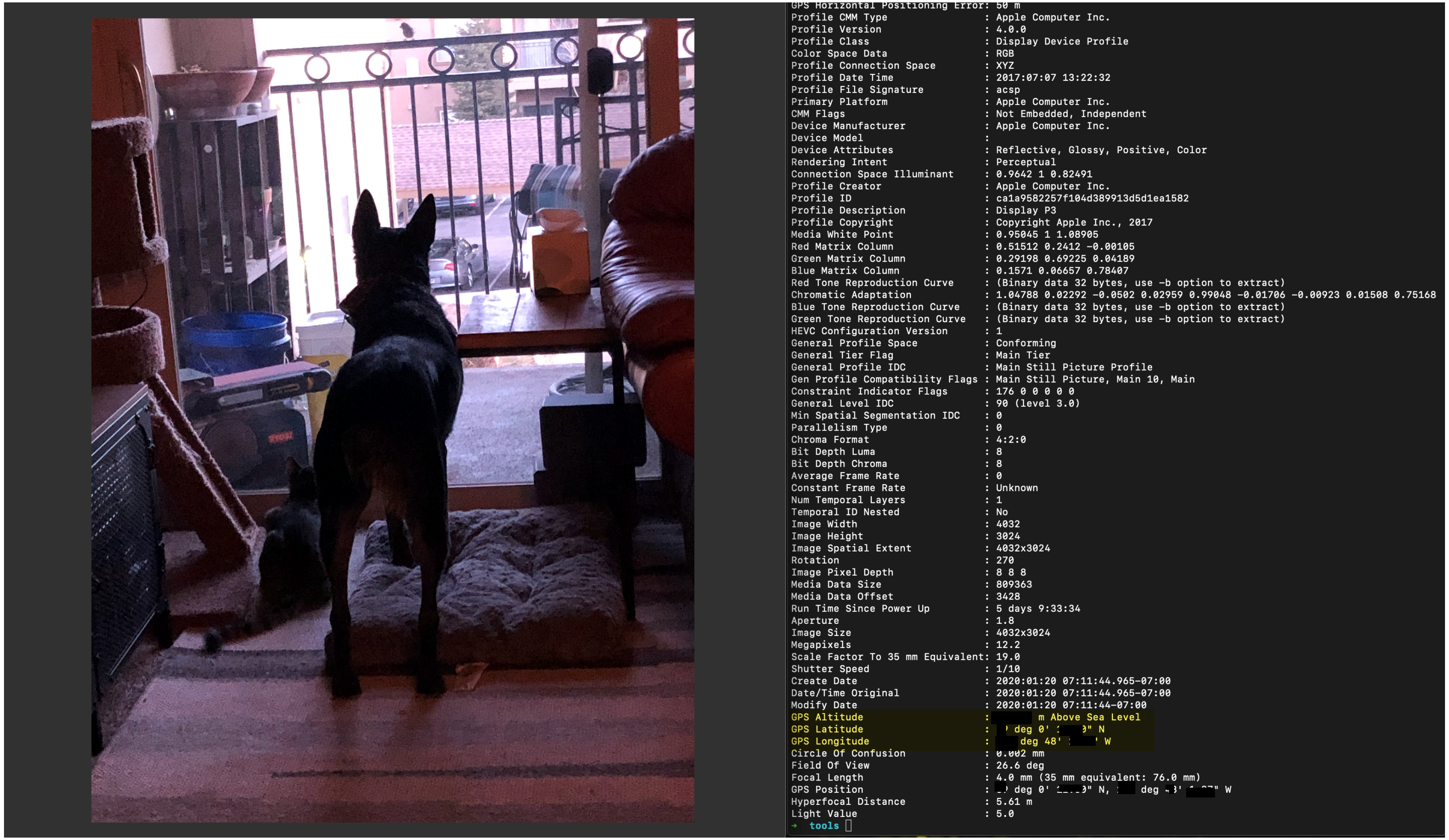
Favorite Sports Teams

Unconventional Sources of Information



Snapchat Maps

Unconventional Sources of Information



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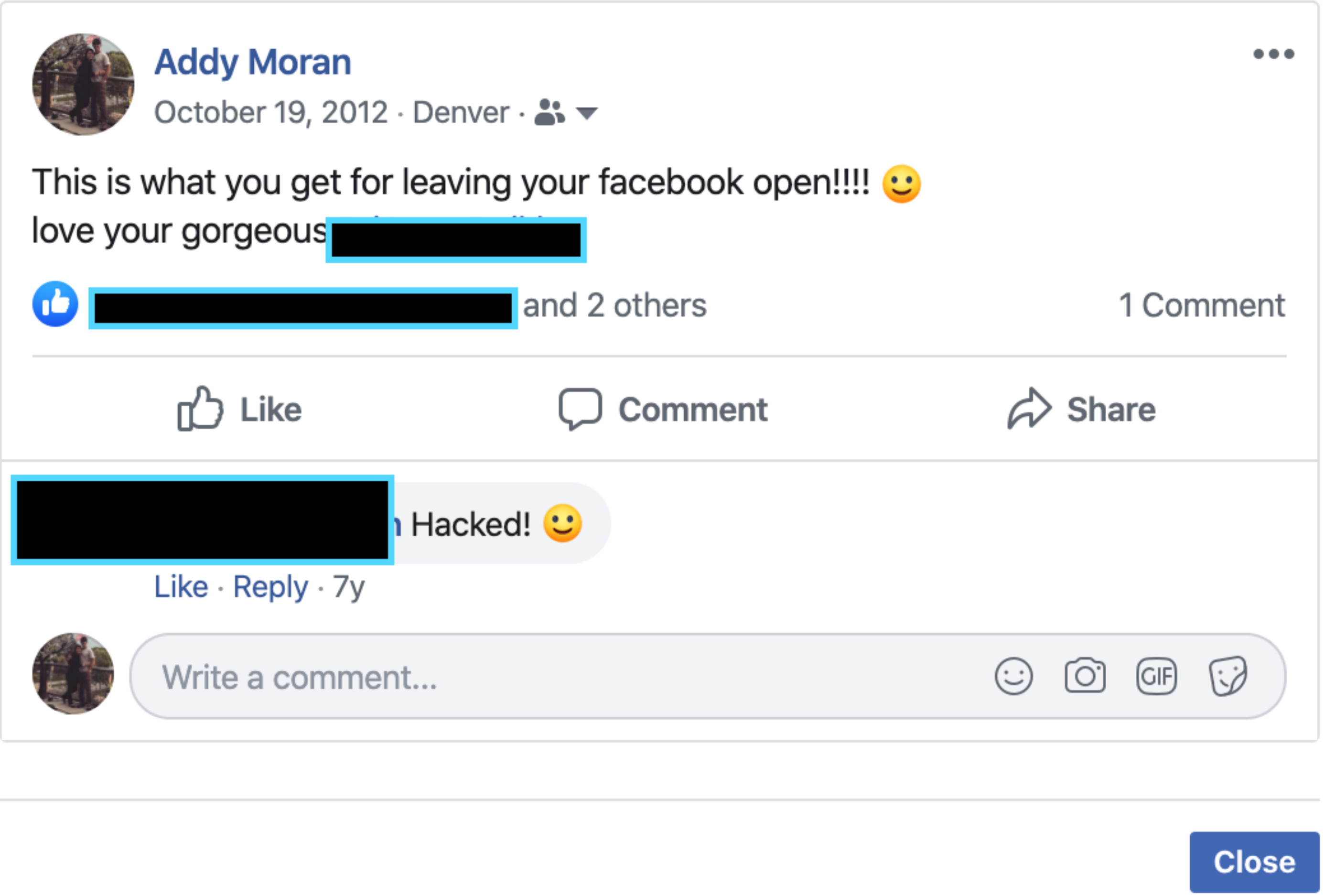
GPS Horizontal Positioning Error: 50 m
Profile CMM Type                : Apple Computer Inc.
Profile Version                 : 4.0.0
Profile Class                   : Display Device Profile
Color Space Data                : RGB
Profile Connection Space        : XYZ
Profile Date Time               : 2017:07:07 13:22:32
Profile File Signature          : acsp
Primary Platform                : Apple Computer Inc.
CMM Flags                       : Not Embedded, Independent
Device Manufacturer             : Apple Computer Inc.
Device Model                    :
Device Attributes               : Reflective, Glossy, Positive, Color
Rendering Intent                : Perceptual
Connection Space Illuminant     : 0.9642 1 0.82491
Profile Creator                 : Apple Computer Inc.
Profile ID                      : ca1a9582257f104d389913d5d1ea1582
Profile Description             : Display P3
Profile Copyright               : Copyright Apple Inc., 2017
Media White Point               : 0.95045 1 1.08905
Red Matrix Column               : 0.51512 0.2412 -0.00105
Green Matrix Column             : 0.29198 0.69225 0.04189
Blue Matrix Column              : 0.1571 0.06657 0.78407
Red Tone Reproduction Curve     : (Binary data 32 bytes, use -b option to extract)
Chromatic Adaptation            : 1.04788 0.02292 -0.0502 0.02959 0.99048 -0.01706 -0.00923 0.01508 0.75168
Blue Tone Reproduction Curve    : (Binary data 32 bytes, use -b option to extract)
Green Tone Reproduction Curve   : (Binary data 32 bytes, use -b option to extract)
HEVC Configuration Version      : 1
General Profile Space           : Conforming
General Tier Flag               : Main Tier
General Profile IDC             : Main Still Picture Profile
Gen Profile Compatibility Flags : Main Still Picture, Main 10, Main
Constraint Indicator Flags      : 176 0 0 0 0 0
General Level IDC               : 90 (level 3.0)
Min Spatial Segmentation IDC    : 0
Parallelism Type                : 0
Chroma Format                   : 4:2:0
Bit Depth Luma                  : 8
Bit Depth Chroma                : 8
Average Frame Rate              : 0
Constant Frame Rate             : Unknown
Num Temporal Layers             : 1
Temporal ID Nested              : No
Image Width                     : 4032
Image Height                    : 3024
Image Spatial Extent            : 4032x3024
Rotation                        : 270
Image Pixel Depth               : 8 8 8
Media Data Size                 : 809363
Media Data Offset               : 3428
Run Time Since Power Up         : 5 days 9:33:34
Aperture                        : 1.8
Image Size                      : 4032x3024
Megapixels                      : 12.2
Scale Factor To 35 mm Equivalent: 19.0
Shutter Speed                   : 1/10
Create Date                     : 2020:01:20 07:11:44.965-07:00
Date/Time Original              : 2020:01:20 07:11:44.965-07:00
Modify Date                     : 2020:01:20 07:11:44-07:00
GPS Altitude                    : [redacted] m Above Sea Level
GPS Latitude                    : [redacted] deg 0' [redacted]" N
GPS Longitude                   : [redacted] deg 48' [redacted]' W
Circle Of Confusion             : 0.002 mm
Field Of View                   : 26.6 deg
Focal Length                    : 4.0 mm (35 mm equivalent: 76.0 mm)
GPS Position                    : [redacted] deg 0' [redacted]" N, [redacted] deg [redacted]' [redacted]" W
Hyperfocal Distance             : 5.61 m
Light Value                     : 5.0
→  tools □
```

EXIF Data

Approved for Public Release

Exploiting the Access of an Insider Threat



Addy Moran

October 19, 2012 · Denver ·

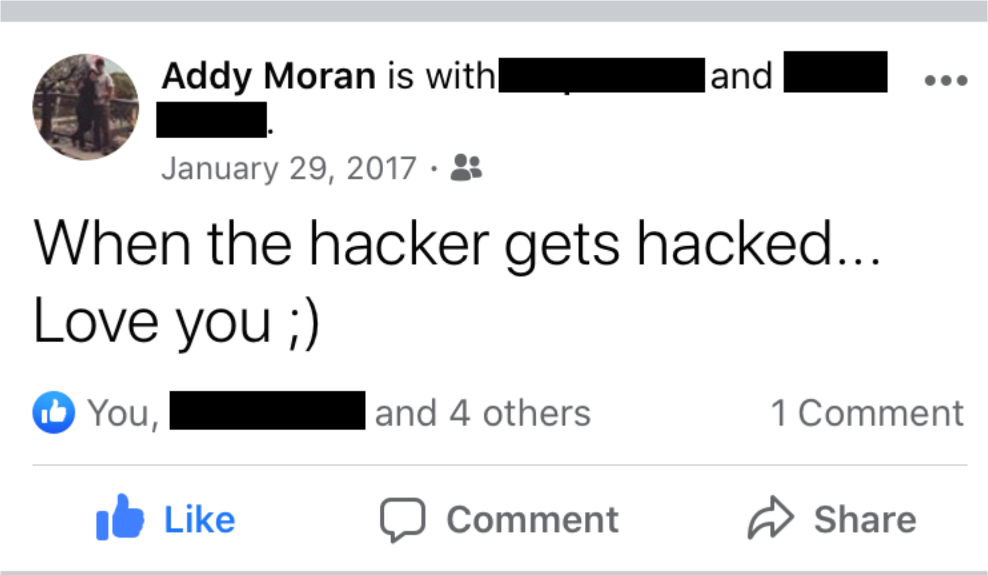
This is what you get for leaving your facebook open!!!! 🙂
love your gorgeous [redacted]

[redacted] and 2 others 1 Comment

[redacted] Hacked! 🙂

Like · Reply · 7y

Exploiting the Access of an Insider Threat



Addy Moran is with [redacted] and [redacted] [redacted].

January 29, 2017 ·

When the hacker gets hacked...
Love you ;)

You, [redacted] and 4 others

1 Comment

Company/Organization Perspective

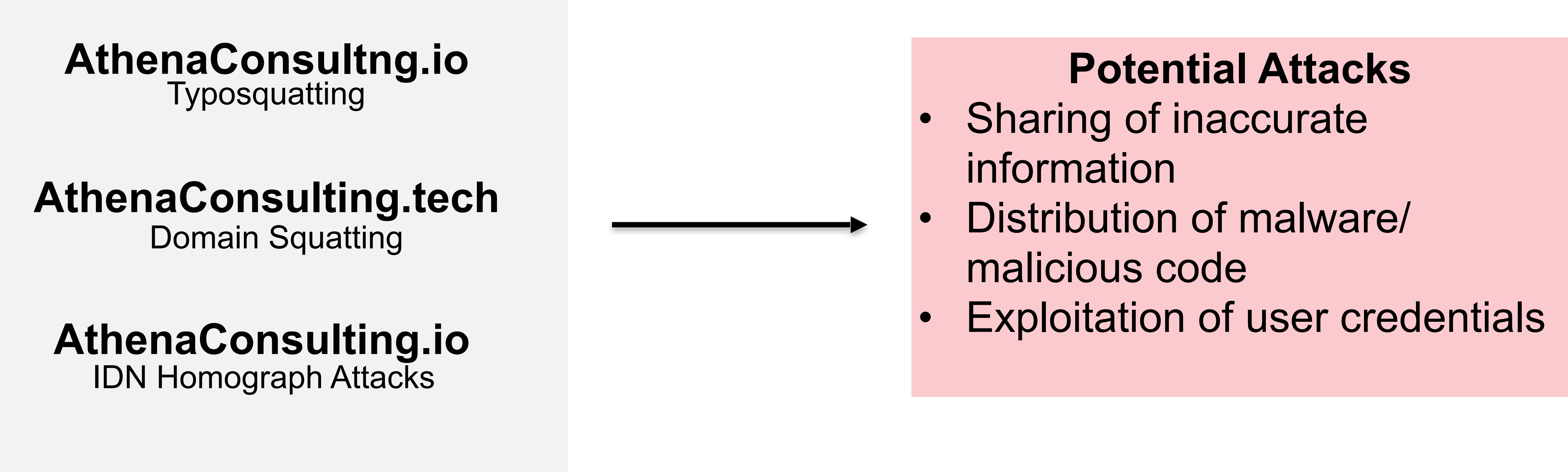
- In today’s society, organizations advertise and conduct much of their business online.

- At a minimum, a company has:
  - at least 1 domain registered to the company
  - at least 1 email used for the company
  - at least 1 server/computer connected to company assets

In order to advertise and grow as a company, a digital footprint is necessary

Domain Attacks

Real Company: AthenaConsulting.io



AthenaConsultng.io
Typosquatting

AthenaConsulting.tech
Domain Squatting

AthenaConsulting.io
IDN Homograph Attacks

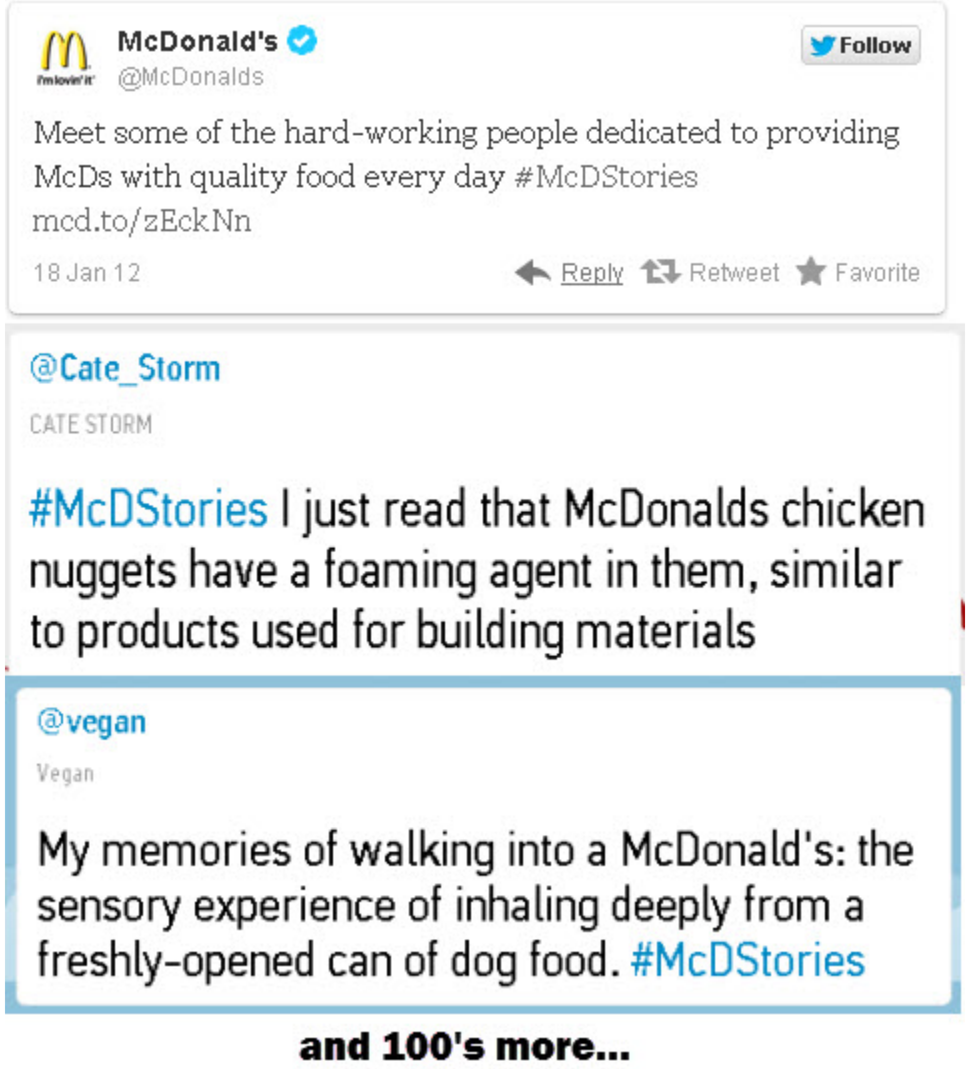
Potential Attacks

- Sharing of inaccurate information
- Distribution of malware/ malicious code
- Exploitation of user credentials

By owning a domain similar to a real and trusted company's, an attacker can destroy a company's reputation

Hashtags

- Hashtag hijacking: “when a hashtag that a brand sets up to generate positive PR, is hijacked by detractors. Instead of being used for positive sentiment, it is used for attacks on the business, or in a sarcastic or snarky way.” (Campbell, 2019)



McDonald's
@McDonalds

Meet some of the hard-working people dedicated to providing McDs with quality food every day #McDStories mcd.to/zEckNn

18 Jan 12

@Cate_Storm
CATE STORM

#McDStories I just read that McDonalds chicken nuggets have a foaming agent in them, similar to products used for building materials

@vegan
Vegan

My memories of walking into a McDonald's: the sensory experience of inhaling deeply from a freshly-opened can of dog food. #McDStories

and 100's more...

https://www.felberpr.com/blog/the-danger-of-hashtag-hijacking-and-how-to-prevent-it/

Hashtags

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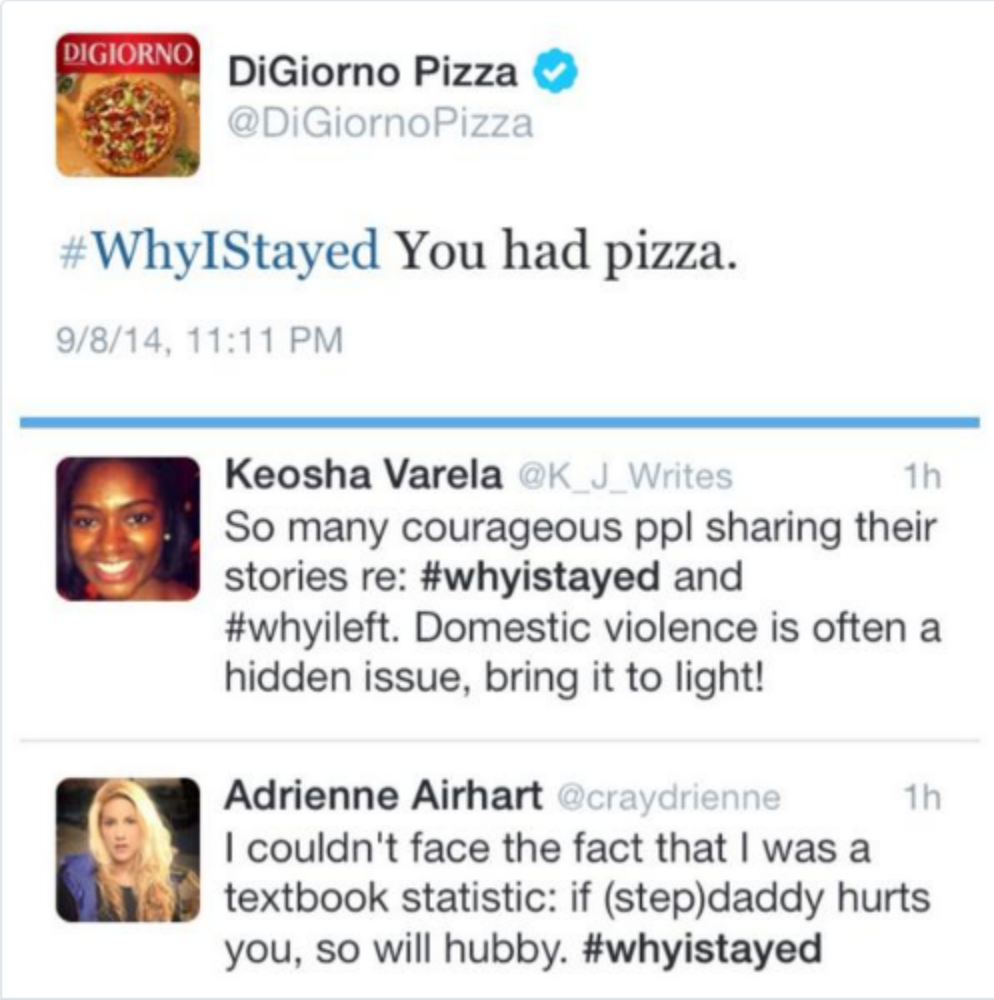


DiGiorno Pizza
@DiGiornoPizza

#WhyIStayed You had pizza.

9/8/14, 11:11 PM

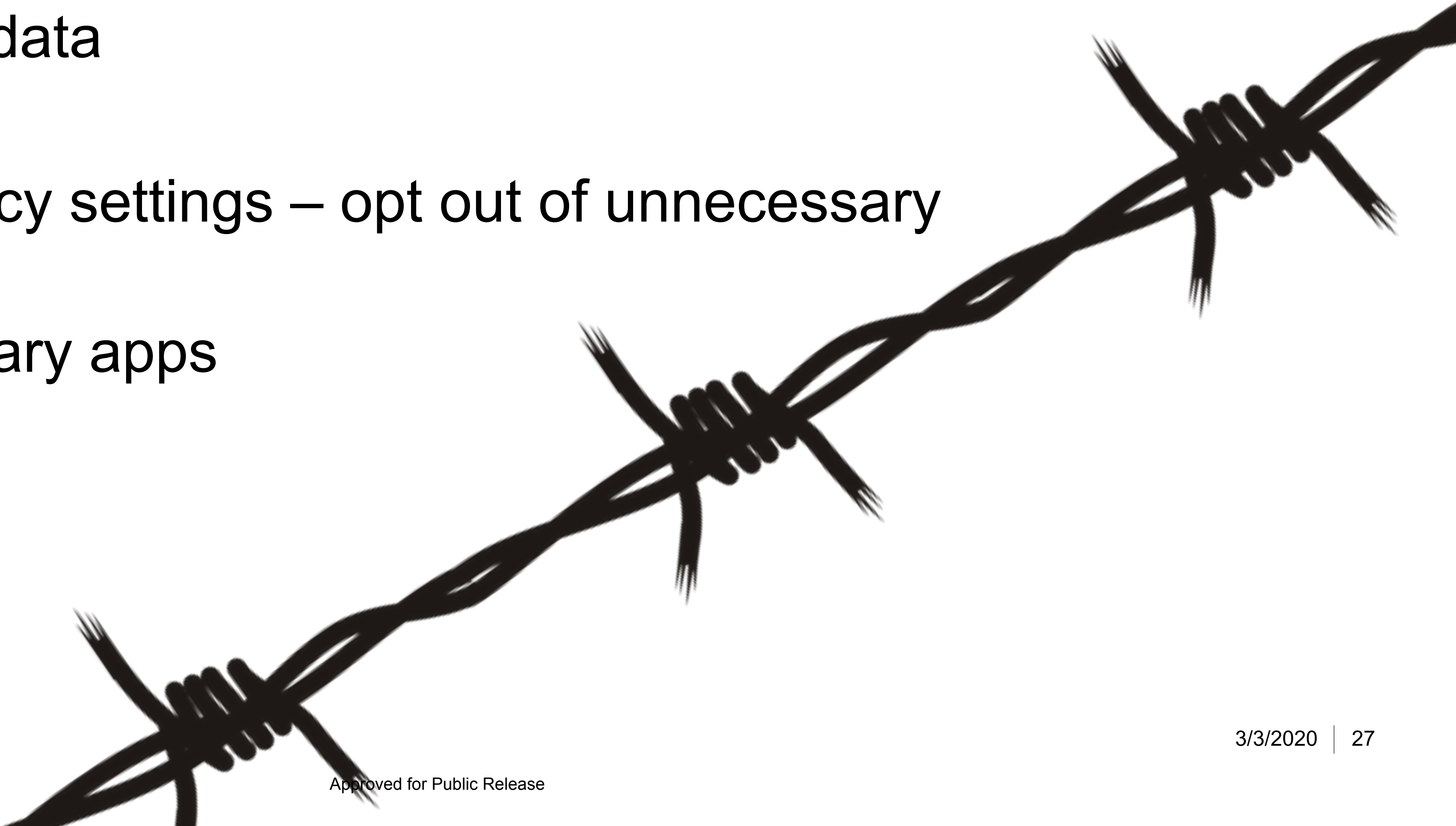
Keosha Varela @K_J_Writes 1h
So many courageous ppl sharing their stories re: **#whyistayed** and #whyileft. Domestic violence is often a hidden issue, bring it to light!

Adrienne Airhart @craydrienne 1h
I couldn't face the fact that I was a textbook statistic: if (step)daddy hurts you, so will hubby. **#whyistayed**

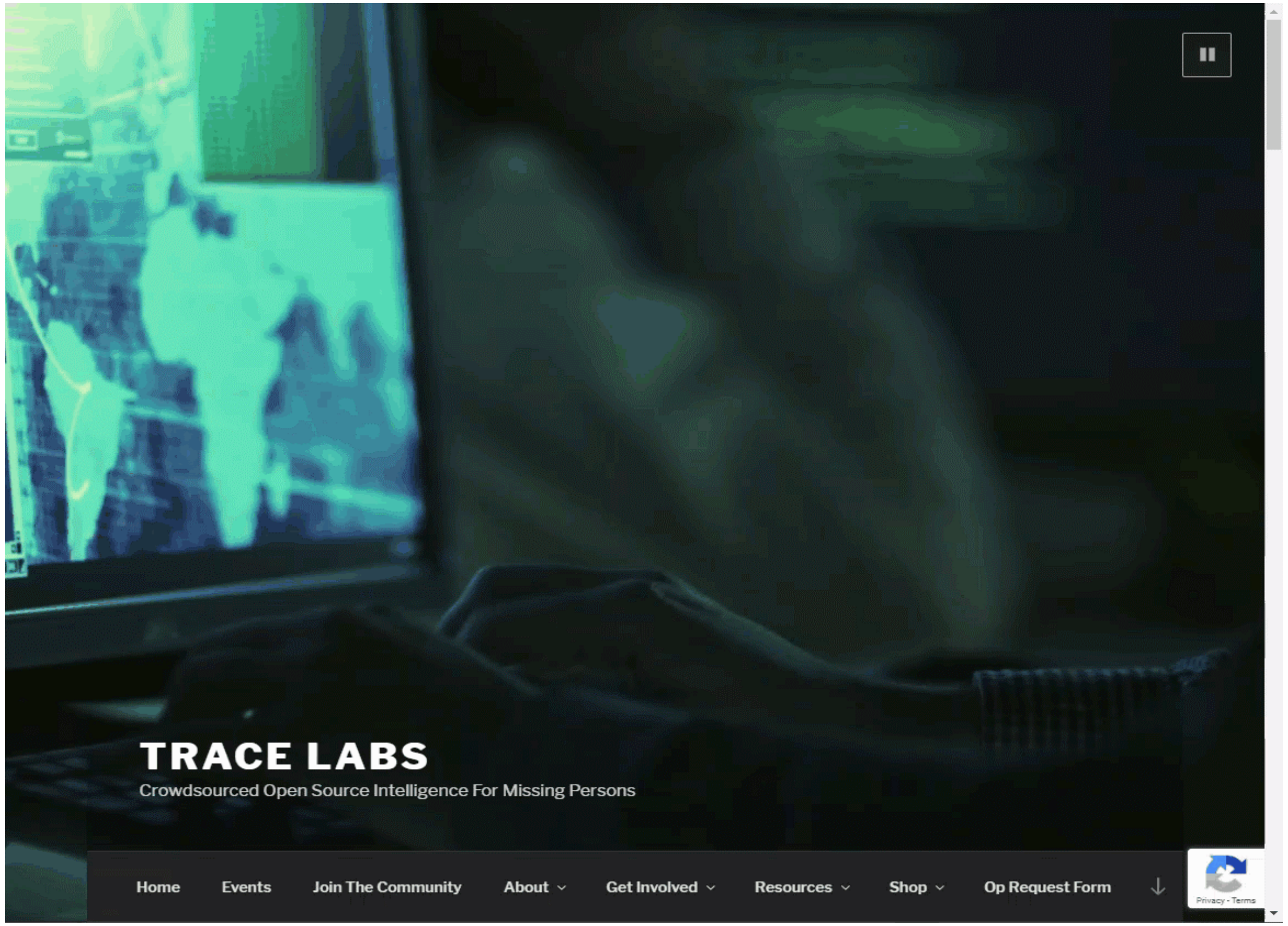
https://setup.us/blog/hashtag-hijacking

Defensive Measures

- When answering security questions don’t actually answer the question but use something close enough to remember
- Turn off location data
- Privacy screens
- Check your privacy settings – opt out of unnecessary permissions
- Delete unnecessary apps



White Hat OSINT



OSINT methodologies is used to gain valuable information, not only for malicious purposes but to find and fight criminal activity

Resources

- Opportunities & Real Life Examples
  - Trace Labs CTF: tracelabs.org
  - Operation Safe Escape: goaskrose.com
  - The BADASS-Army: badassarmy.org
  - The Innocent Lives Foundation: innocentlivesfoundation.org
- Tools
  - OSINT Tool Breakdown: osintframework.com
  - ExifTool: github.com/exiftool/exiftool

Approved for Public Release