

Sneaky Spy Devices and Defective Detectors: The Ecosystem of Intimate Partner Surveillance with Covert Devices

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CONTENT WARNING:

Descriptions of Domestic Abuse

Descriptions of Surveillance

Intimate Partner Violence (IPV) affects
1 in 3 women worldwide



Of those, **63%** experience **tech abuse**^{1,2}



Anecdotal evidence suggests that abusers are using **covert devices** for **intimate partner surveillance** (IPS)

CBS NEWS

CRIME >

"American Idol" winner Laine Hardy arrested in Louisiana for allegedly placing recording device in ex-girlfriend's room

BY ZOE CHRISTEN JONES
UPDATED ON: APRIL 29, 2022 / 2:35 PM / CBS NEWS

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AirTags are being used to track people and cars. Here's what is being done about it

February 18, 2022 · 5:37 PM ET
Heard on [All Things Considered](#)
By [Michael Levitt](#)

What devices are **available** for abusers to purchase?

How do these covert devices **work**?

Are they **effective** at enabling IPS?

Are **useful** detection tools available for survivors?

What is a covert device?

Hideable



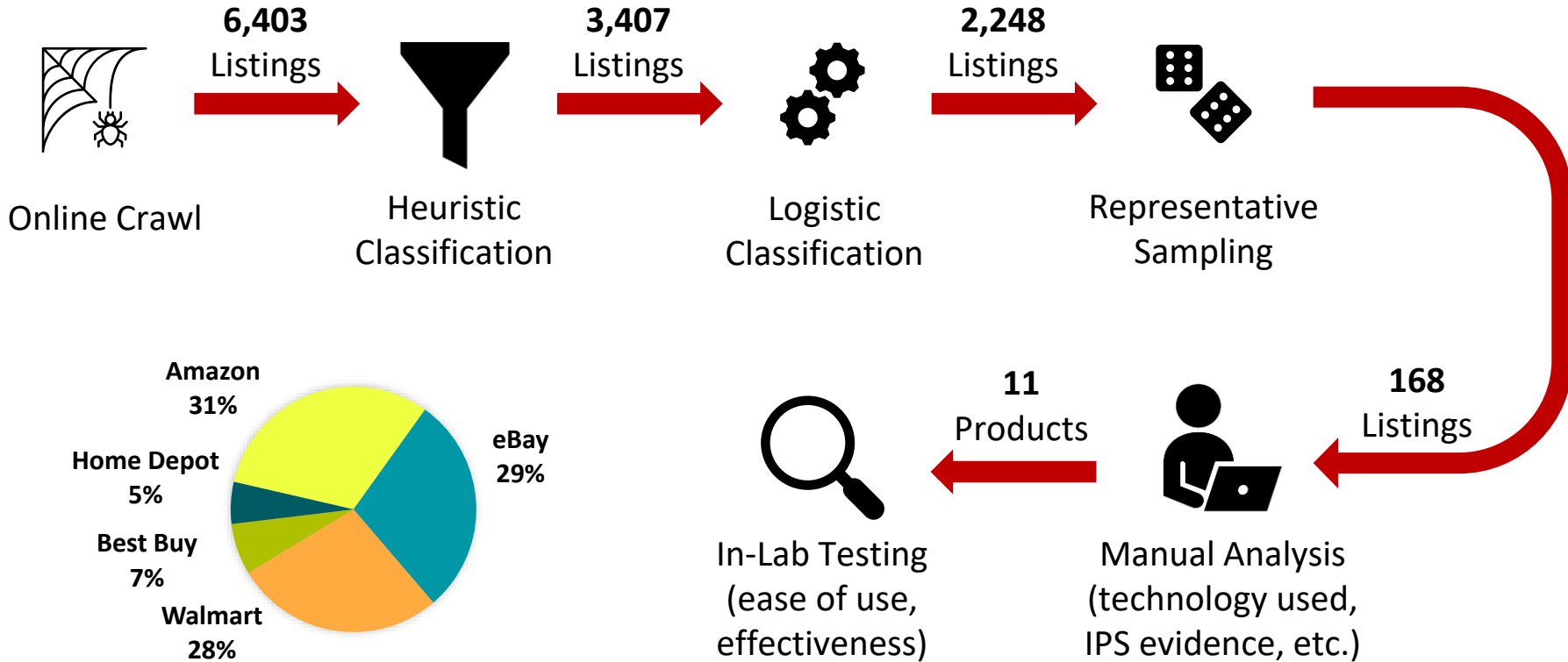
Disguised



Not Covert



Large scale measurement study of covert devices



Are covert devices **available** to abusers?




TACUWA Spy Camera
Hidden Camera
WiFi,Smallest HD Mini
Spy Cam for Home
Security Easy to Use
Wireless Indoor
Surveillance with
Motion Detection
Night Vision

Brand: TACUWA
2.8 ★★★★★ 63 ratings
| 8 answered questions

-26% **\$19⁹⁹**
Typical price: \$26.⁹⁹

✓prime One-Day



iTrackLTE

**Versatile Vehicle Tracking
Devices for Cheating Wife
iTrack PUCK GPS Tracker**

\$56.38

Over 50% of devices cost **less than \$20**

Are device sellers aware of IPS?

13 (7%) of the devices we analyzed **explicitly advertised for IPS**

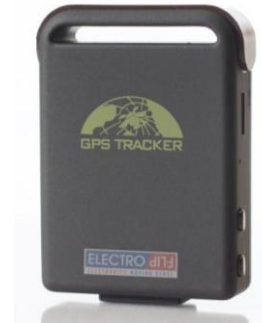


iTrack 2.0

**Catch Cheating Spouse
w/ NEW iTrack GPS
Tracker Cheaters Spy
Equipment**

\$55.99

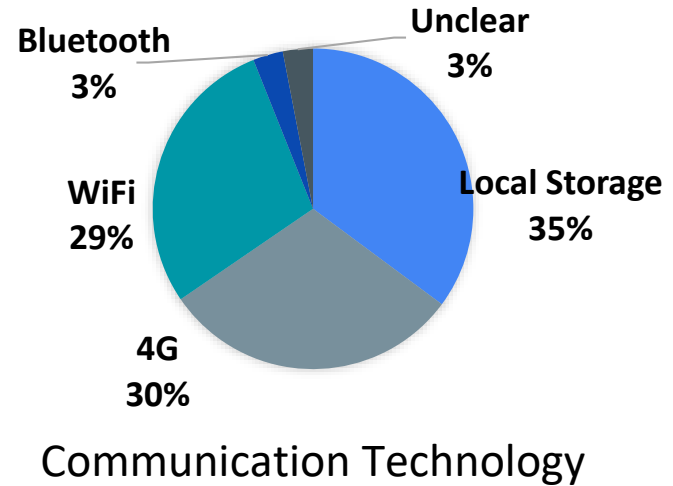
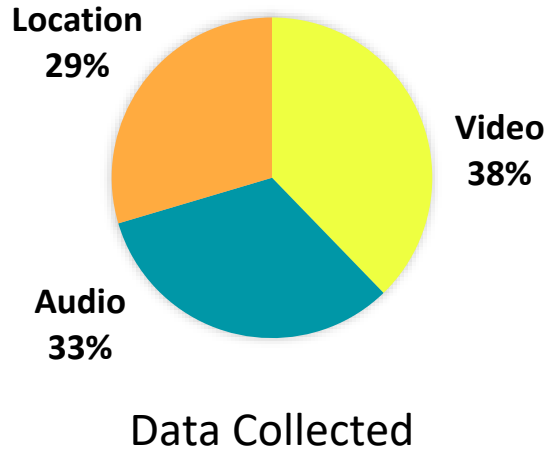
**Find Spouse Cheating Affair Spy
Surveillance GPS Tracking Device**



Neither Amazon, eBay, nor Walmart forbid devices from promoting IPS

“Best device ever! This little gem has won me tons of arguments and now my husband can no longer do sneaky things behind my back!”

What **types** of devices are there? Are they **effective** at enabling IPS?



These devices are **easy to set up and use** and **effective at recording sensitive information**

Covert devices are **available, cheap, and effective**

Are **useful** detection tools available for survivors?

Identification



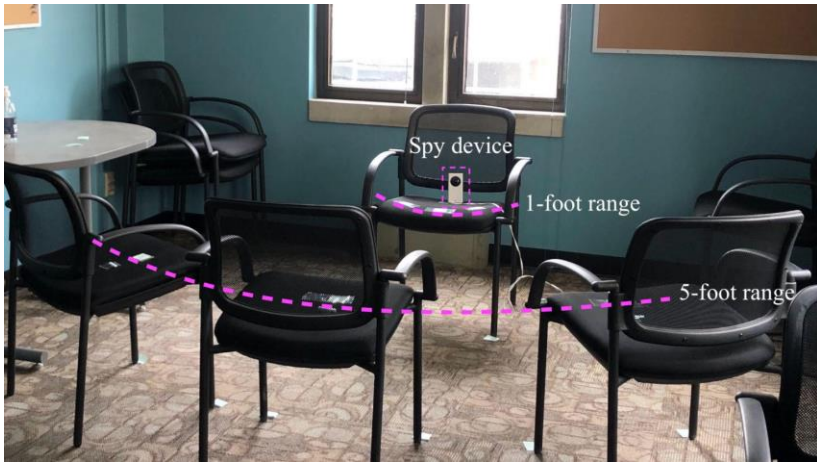
Localization



Usability

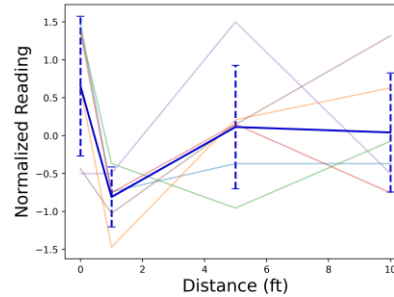


Do commercial detectors work?

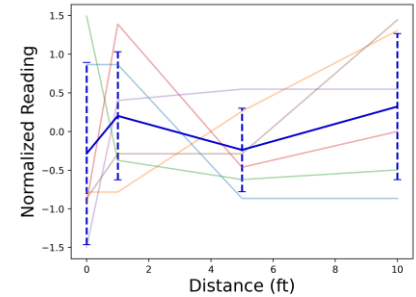


Experimental Setup

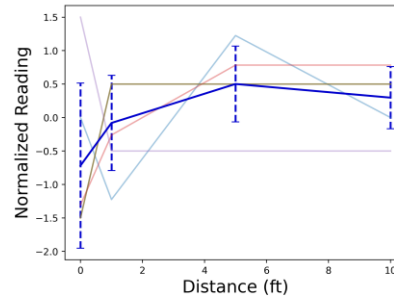
Android App 1



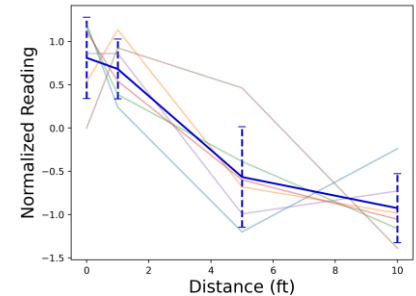
Android App 2



iPhone App



Physical Detector



None of the commercial detectors could detect devices

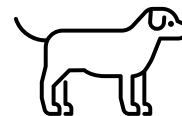
Are academic device detection systems any better?

USENIX Security 2021

I Always Feel Like Somebody's Sensing Me! A Framework to Detect, Identify, and Localize Clandestine Wireless Sensors

Akash Deep Singh, *University of California, Los Angeles*; Luis Garcia, *University of California, Los Angeles, and USC ISI*; Joseph Noor and Mani Srivastava, *University of California, Los Angeles*

SnoopDog



- Requires **user tuning** to detect
- Tuning requires **knowledge of the presence of devices**

USENIX Security 2022

Lumos: Identifying and Localizing Diverse Hidden IoT Devices in an Unfamiliar Environment

Rahul Anand Sharma, Elahe Soltanaghaei, Anthony Rowe,
and Vyas Sekar, *Carnegie Mellon University*

Lumos



- Did not work in lab setting
- Still a **prototype**

Both systems are inappropriate for survivors

What do we need to empower survivors?



Usable and effective
techniques to detect **diverse**
devices

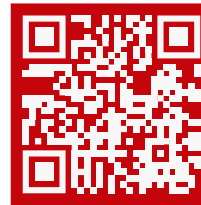


Policies that **prohibit** the
sale of devices that
advertise IPS



Guidelines for developers
to design devices that **resist**
IPS use

ceccio@wisc.edu
ceccio247.github.io



GitHub Repo