

Counter Surveillance Is For Everyone With ESP32

Cybertiger, Colonel Panic, The Wrew

```
$ cat /etc/passwd
```

```
Cybertiger - Senior Staff Technologist @ EFF; creator of Rayhunter;  
Reverser of malware; distributor of memes; first of his name
```

```
Colonel Panic - Works @ Undisclosed Malware research company;  
creator of OUI-Spy, Mesh-Detect, and the Dynamic Vision Assist.
```

```
The Wrew - Funemployed; creator of VoidMantisOS for the Hacker  
Pager, and WrewOS.
```

```
# WARNING: All users on this server have exceeded the monthly dad  
joke quota
```

Meet the ESP-32

- SoC/Module that runs FreeRTOS
- Wifi (2ghz on s3, 5ghz on c5)
- Bluetooth
- Dual Core (not the rapper)
- Arduino like interface
- Program in C, C++, MicroPython, Lua or Rust!
- It's cheap! ☐





The Surveillance Industry is Growing

- ICE Budget has tripled
- Surveillance Industry Expanding
- Our President invests in surveillance tech
- Surveillance has bipartisan support from the epstein class
- And bipartisan opposition from everyone else!



AI surveillance is being supercharged - and it will chill social progress

Bruce Schneier and Jon Penney

These systems will soon be able to track our public and private lives. But we can make the policy choices to reject it



📷 'The result will be a kind of supercharged societal level of chilling effects where fear, self-censorship, and groupthink reign.' Photograph: Image Source Limited/Alamy

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AI-Powered Surveillance Is Turning the United States into a Digital Police State. Now is the Time to Stop It.

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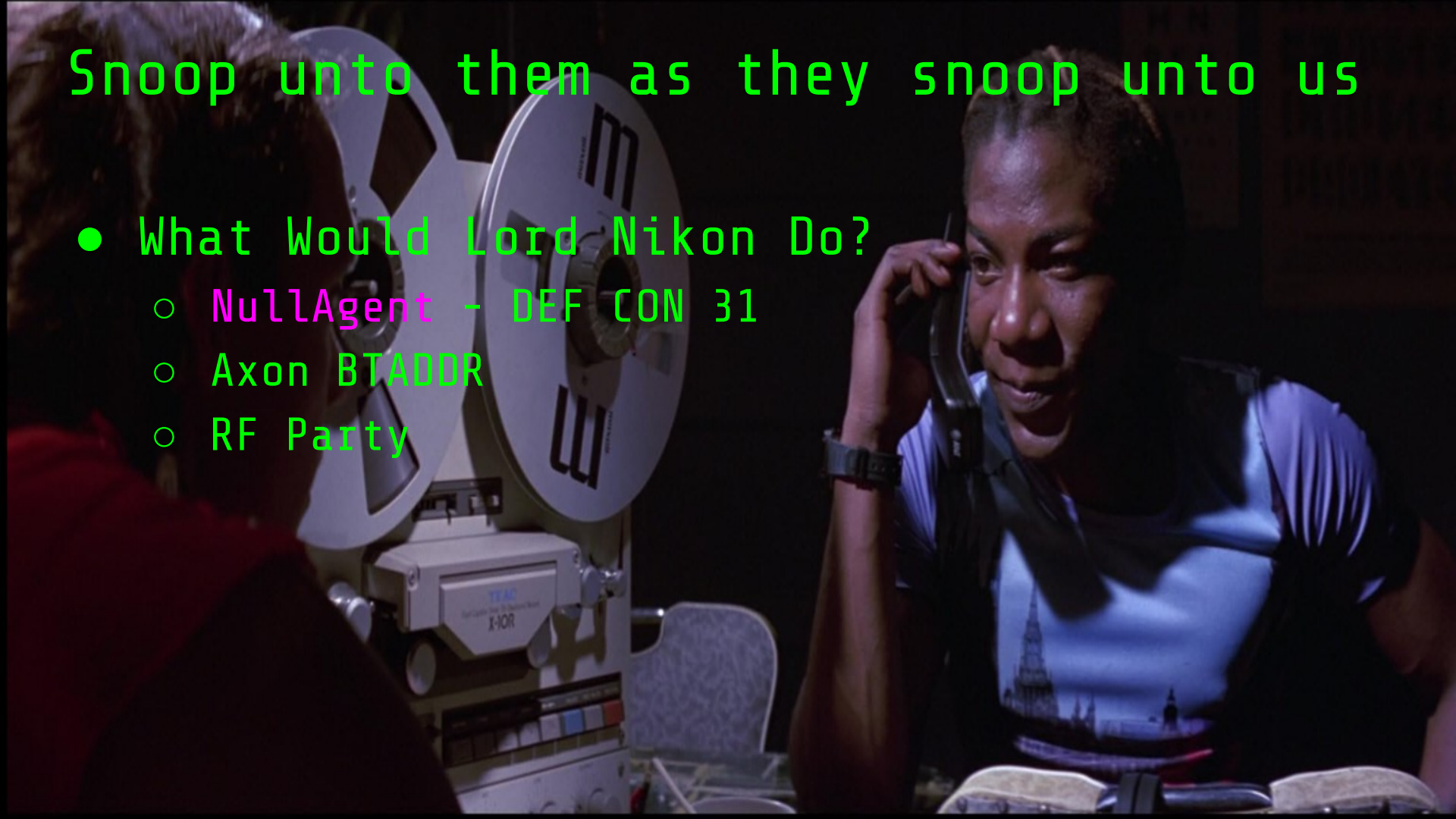


Under the Trump administration, the United States has increasingly become a digital police state—one where pervasive surveillance systems endanger all Americans' fundamental rights, while immigrants, protesters, the administration's political foes, pro-Palestinian activists, transgender individuals, and people seeking reproductive healthcare face particularly intense monitoring and repression wholly inconsistent with our nation's founding principles.

But Donald Trump isn't a king. In our system of federalism, state and local governments retain crucial power to rein in out-of-control surveillance.

Pushing them to do so in Massachusetts is a top priority for the ACLU, and we have already made critical strides at the state level this legislative session with Senate passage of strong, comprehensive data privacy legislation that would hold big tech companies accountable and prevent troves of

Counter Surveillance

A man with short dark hair, wearing a blue t-shirt with a graphic of a city skyline, is sitting at a desk and talking on a black telephone. To his left is a large, vintage reel-to-reel tape recorder with two large reels. The scene is dimly lit, with a warm, reddish-brown glow on the left side of the frame. The background is dark and out of focus.

Snoop unto them as they snoop unto us

- What Would Lord Nikon Do?
 - NullAgent - DEF CON 31
 - Axon BTADDR
 - RF Party

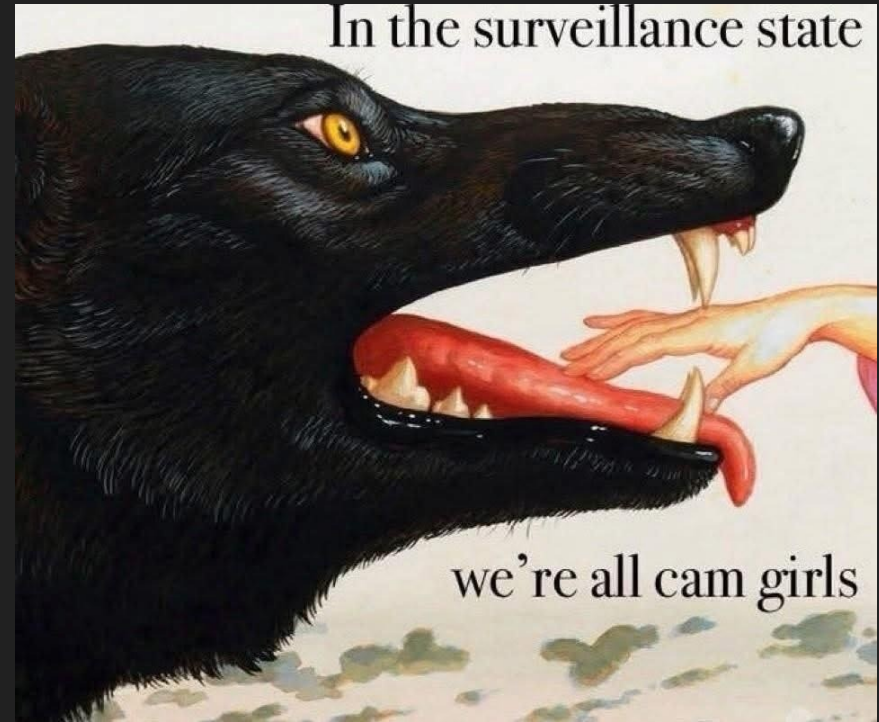
TSCM - What spies use

- Spectrum analyzers
- Non Linear Junction Detectors
- Etc
- It's all very \$\$\$
- But we are not trying to find HIDDEN surveillance



Privacy is here it's just not evenly distributed

- Historically counter surveillance is expensive and technical
- We can make it cheap and accessible
- Privacy isn't just for the rich, or hackers
- Anti surveillance is for everyone



Rayhunter

- Built at EFF to detect IMSI catchers
- Free open source software running on cheap hardware
- We have used it globally to find IMSI catchers ITW
- Adversarial reverse engineering!
- A great project but limited in scope





Economic Warfare

**MY TAX
DOLLARS
AT WORK**

**SOMEHOW ALSO MY
TAX DOLLARS AT WORK**

Who Spends Wins

- The economics are on our side
- Rayhunter is \$20, current IMSI catchers are ~ \$1 million
- LVMPD spent 4.37 Million Dollars on 211 Flock Cameras ¹
- You could pair an esp32-s3 with each of these for ~\$850



So What Can We Do?

I'm so glad you asked...



Hey! I'm The Wrew!

Creator of
VoidMantis OS,
hackers.town
pager, WrewOS,
and SpectraMesh



VMOS - a counter-surveillance toolkit

Features:

- SkySpy
- OuiSpy
- Flock-You
- Marauder Toolkit
- RIS-C (Drone Spoofer)
- FoxHunter
- PassGen
- Axonolotyl
- DuckHunt
- RoamingLibrary
- MeshCore & SpectraMesh
- And More...



WrewOS

Features

- DroneRadar
- DRADIS
- Axonolotyl
- Wardrive
- BLE Scanner
- GPS Spoof Detection
- RF Analyzer (w/ WX-1E module)
- Tesla Charge Port Opener (w/ WX-1E module) (...because I could)
- Hidden App Mode



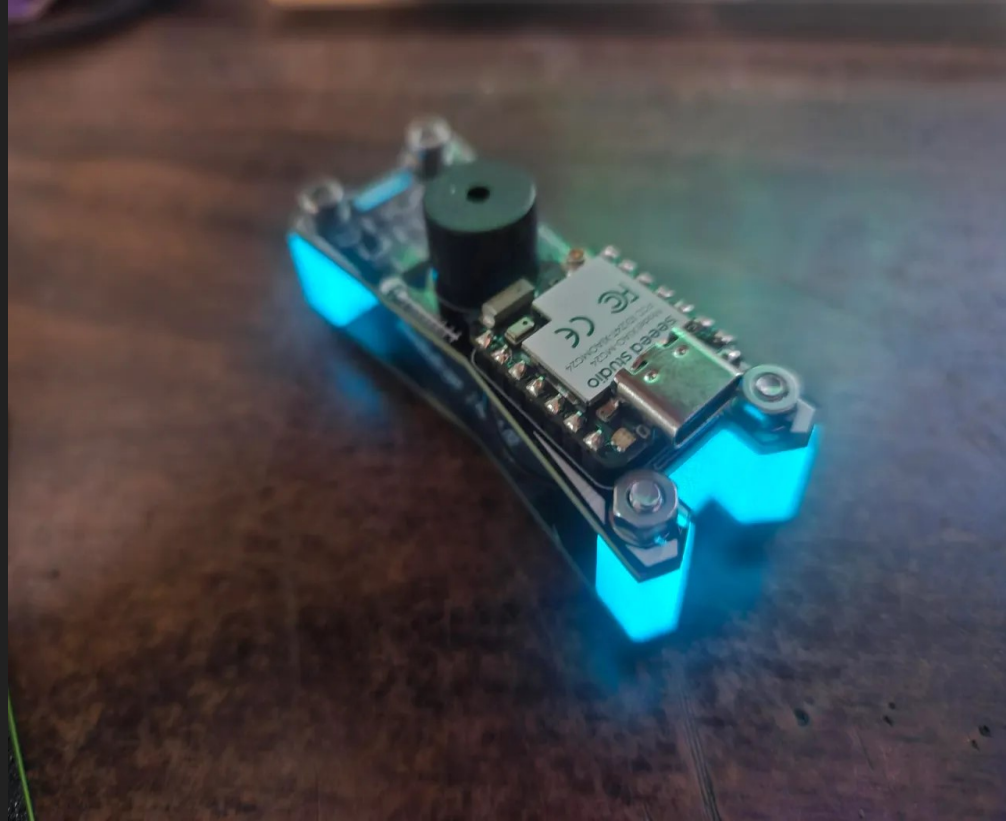
Low Cost Distributed Sensor Net

- Combine LoRa with ESP32 sensors using SpectraMesh
- Low cost, long range sensor net
- Devices warn others nearby automatically when surveillance detected

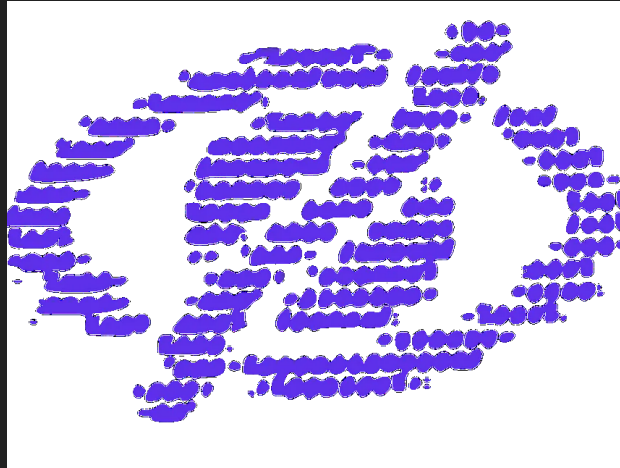
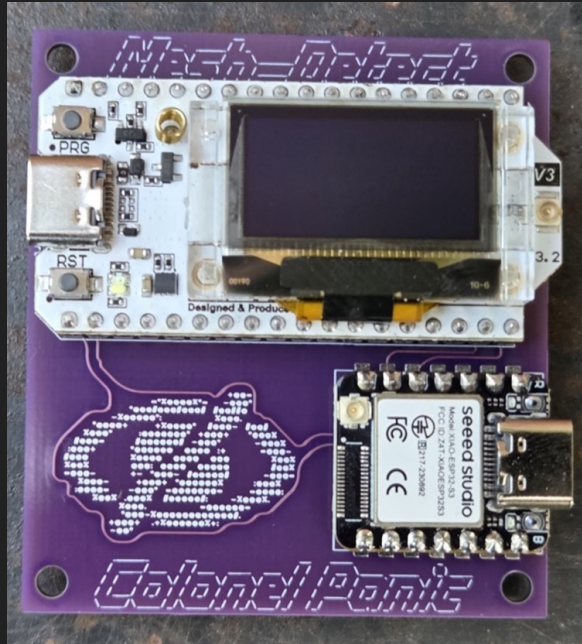
Hello! I am Colonel Panic!



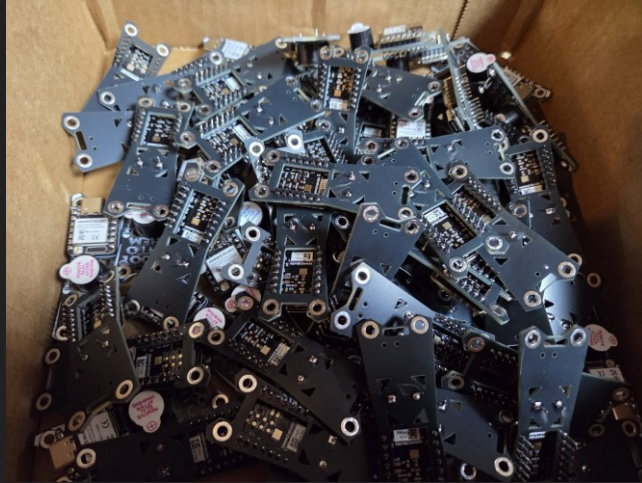
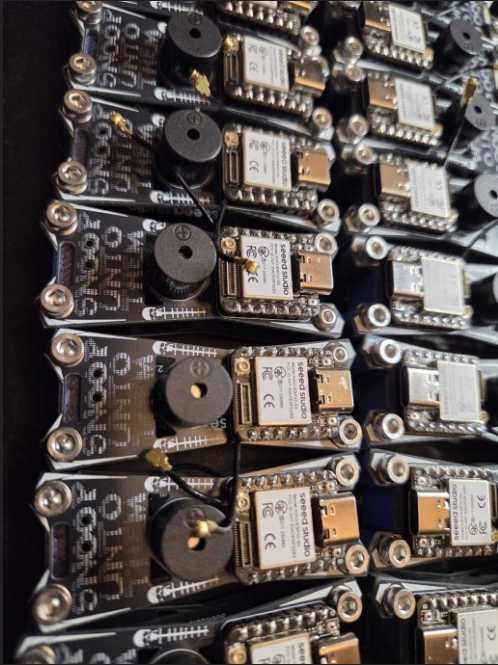
I created the OUI-Spy



And the mesh detect



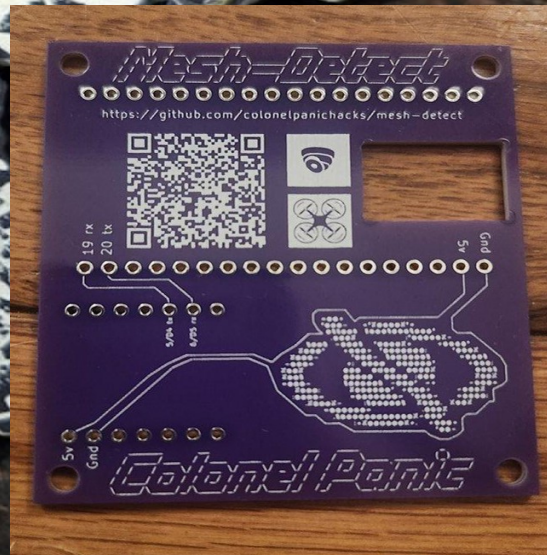
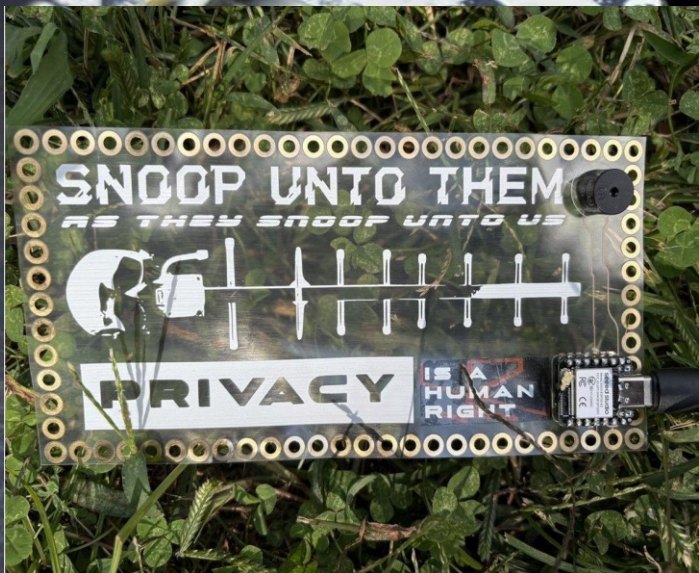
I like cheap things



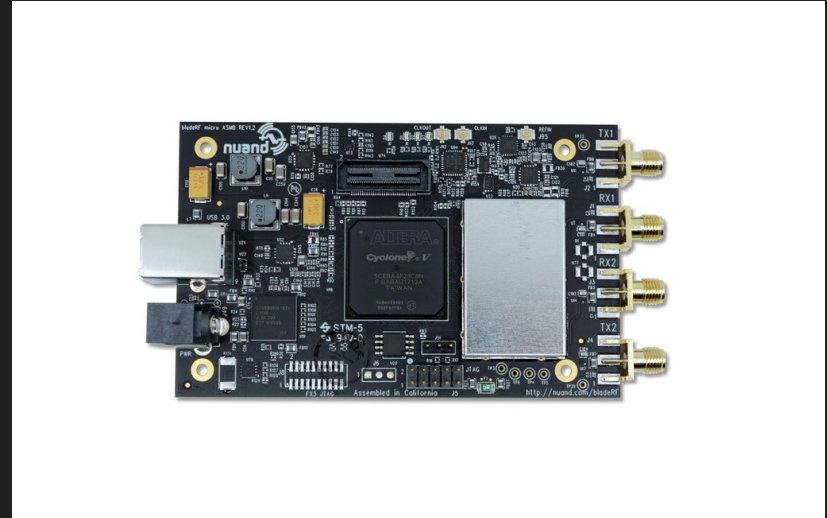
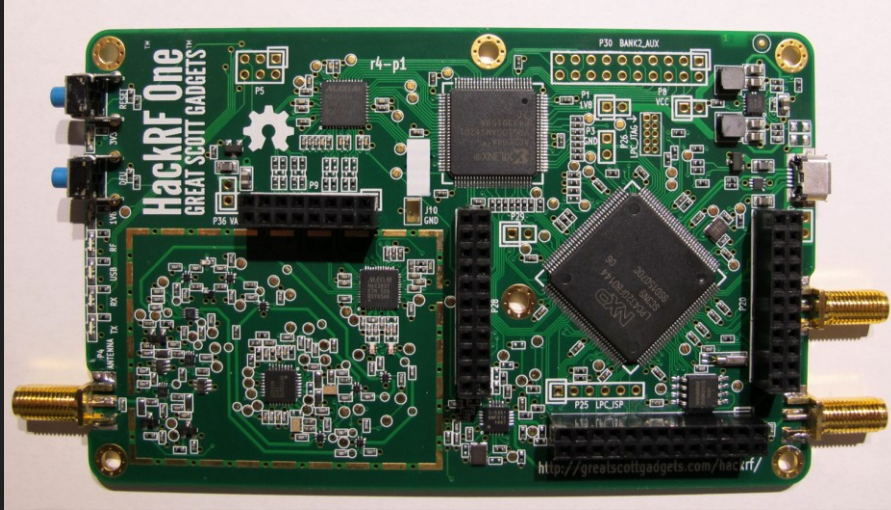
DIY

Open source

And Art!



SDR/Detection



Can be expensive!

Privacy shouldn't be a luxury



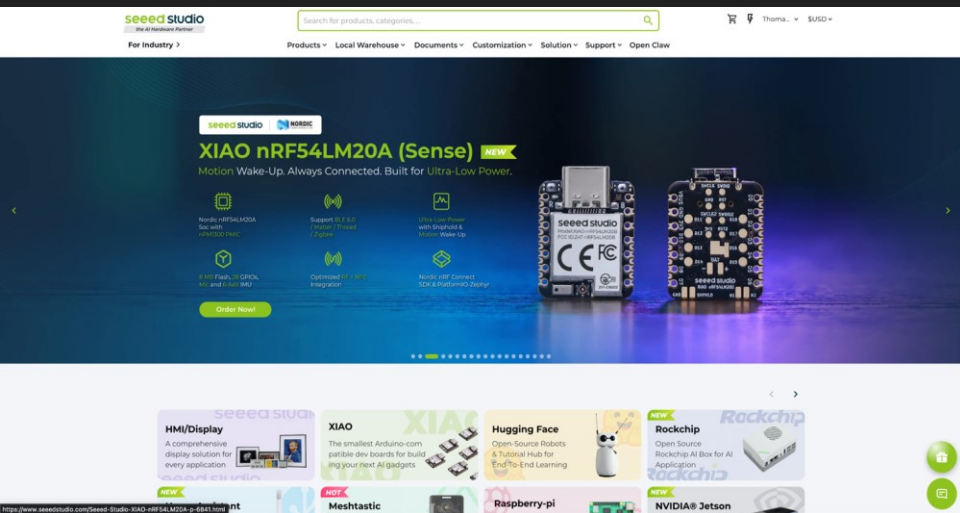
\$7.49



Detection for less than the price of a domestic beer on the strip

ESP32 makes affordable projects cheap and easy for makers

SeeedStudio



M5stack

STACK & PLAY

Standard 5×5cm functionally stacking modularized components hardware system.

The Stacking Functional Modules Built for Customized Assembly.



ESP32 microcontroller, microSDcard slot, USB-C, extension connectors.

Easy Deployment with multifunctional BASE.



Wardriving and detection



How OUI-Spy works

- All Passive (except the unipwn)
 - Ble
 - Wifi
 - OUI Detection
 - Drone Detection

Oui Spy Firmware

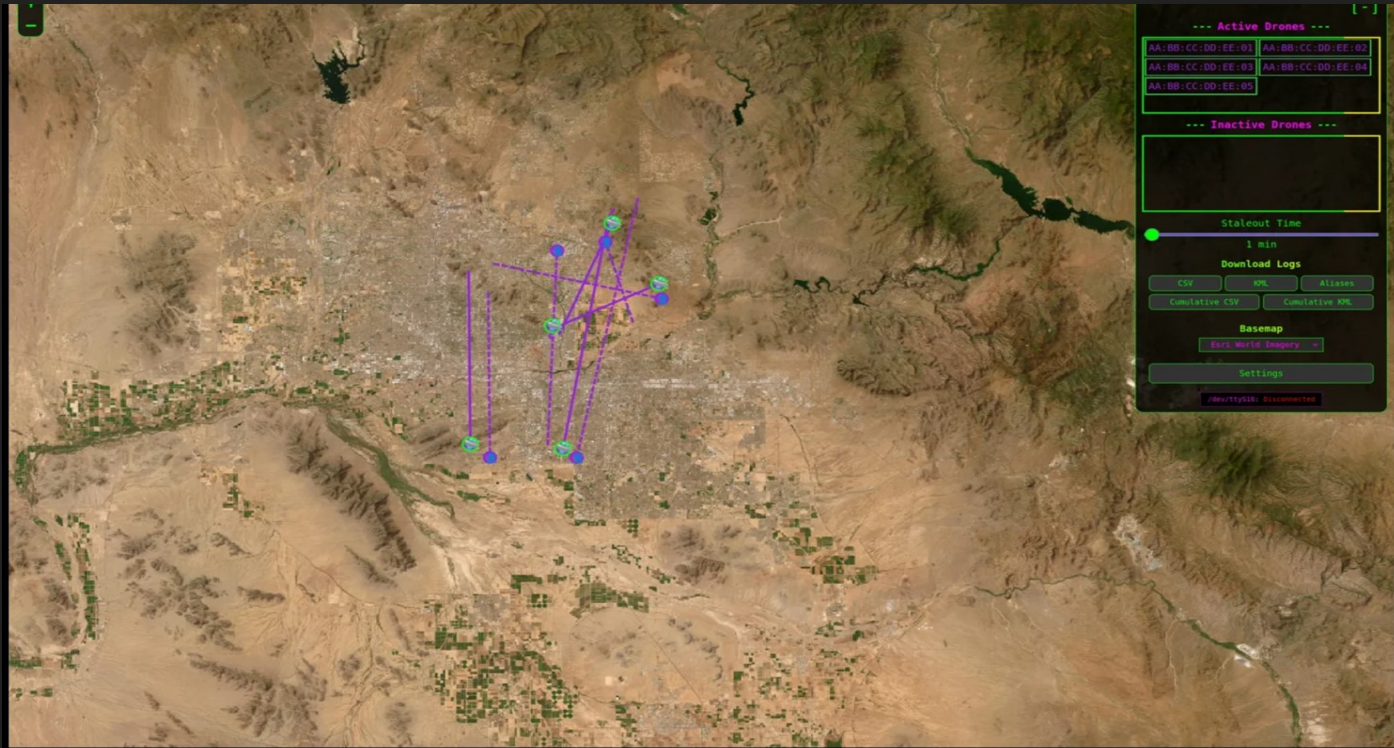
- Oui-Spy Detector
- Sky-Spy
- Flock-you
- Foxhunter

Drones, and bodycams, and flock OH MY




flock off

FAA REMOTEID MAPPING AND ALERTING



With sky spy firmware

Flock you

About

flock cam detection

📖 Readme

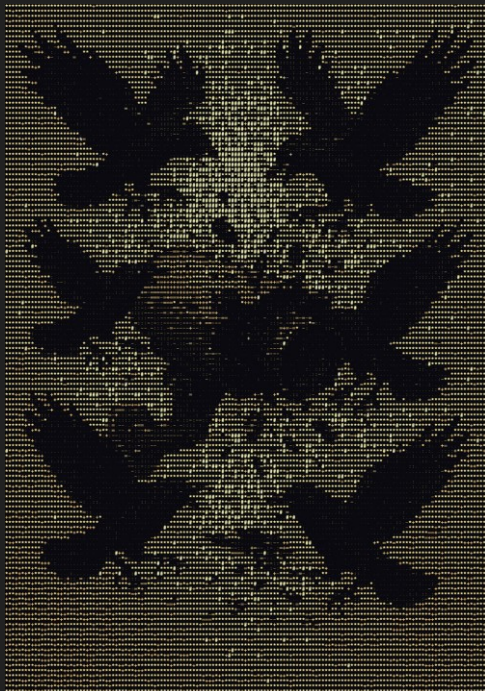
📈 Activity

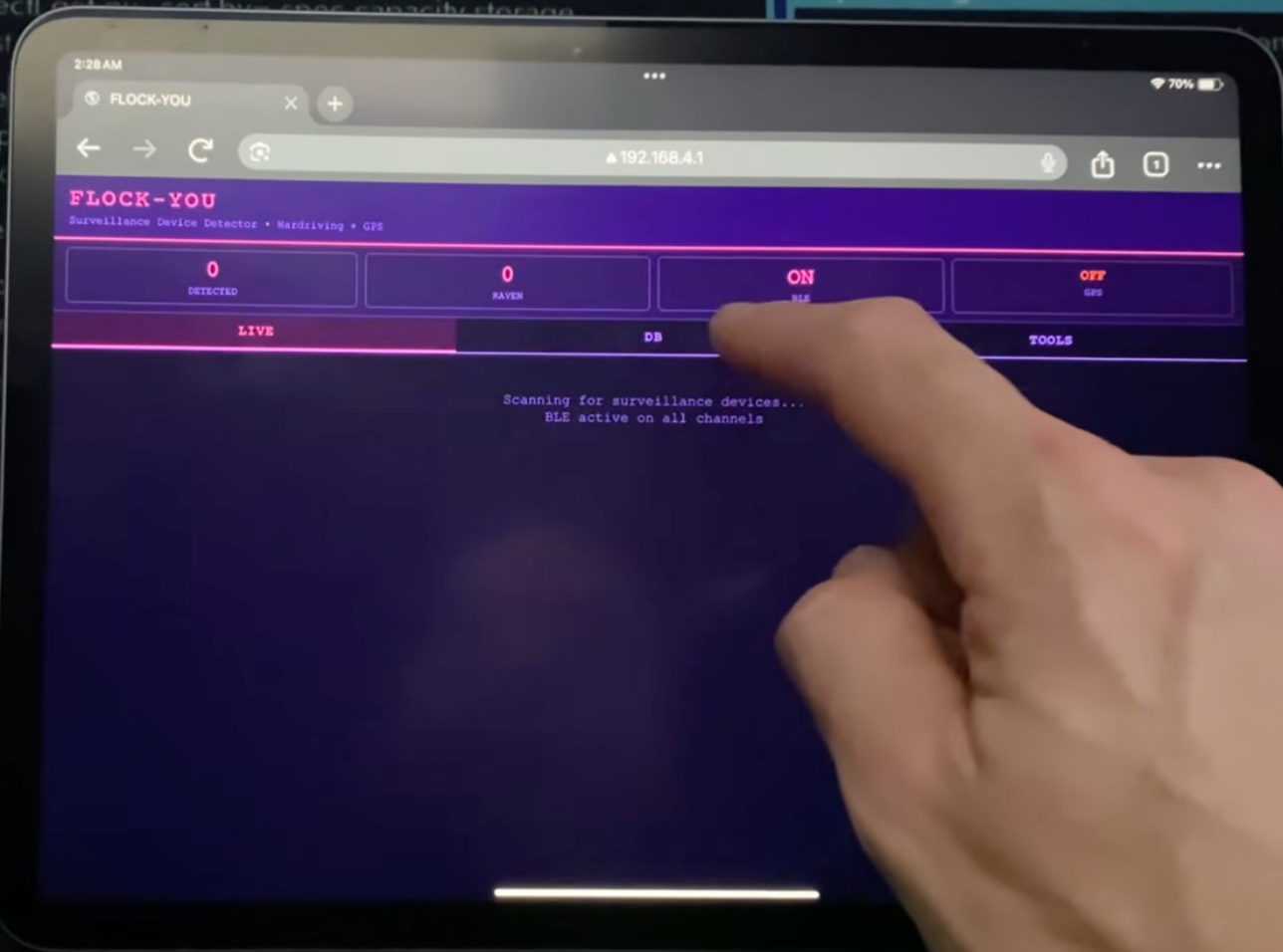
★ 1.1k stars

👁 25 watching

🔗 159 forks

Report repository





MAKE YOUR OWN, Its open source



All you need is an esp32 s3 and a buzzer

What Does the Future Hold

- It turns out ESP32 is really good for cryptography!
 - True randomness based on noise floor of BT and WIFI - love this idea
- What else could we do with that?
- Esp-32-s5 5g! -5g remoteid detection, 5g wifi networks,
- Detect if someone is following you?
- Detect specific people based on BT&WIFI sigs?
- Newer gen flock cameras seem to be using cell connections

If you start watching Hackers at 10:26:35pm on New Year's eve you'll be able to hear Zero Cool yell "Hack The Planet!" out of the back of a cop car at midnight.



What could next gens of hardware look like?

- GPS!
- Screens!
- Buttons!
- Haptic feedback
- 2 xiao boards
- BRING BACK CLEAR CASES YOU FUCKIGN COWARDS!!1!
- PUT THE ART IN ELECTRONICS



Hack the Planet!
What will you build?

Questions?

Cybertiger - bluesky: @cooperq.com | masto: @cooperq.hackers.town | email: cooperq@cooperq.com

The Wrew - Masto: @wrewdison@masto.hackers.town, otherwise ask your mom

Colonel Panic - <https://colonelpanic.tech>,
https://www.instagram.com/colonel_panic_hacks/
<https://github.com/colonelpanichacks>

colonelpanic@protonmail.com

Shoutz & Greetz - Our families, Hackers.Town Crew, EFF Staff & Members, Wigle crew, Deflock, Ordo_Ouroboros, Dz_az, Benn Jordan, HardHat Brigade, Wardrivers, Gainsec for flock research, Hackbloc, DC415, Rf Party, Dirty South Hackers

Endnotes

1. DEF CON 31 - Snoop unto them as they snoop unto us - nullagent
<https://www.youtube.com/watch?v=c01JSzAdPM8>
2. <https://rayhunter.eff.org>
3. <https://thenevadaindependent.com/article/vegas-police-are-big-users-of-license-plate-readers-public-has-little-input-because-its-a-gift>
4. <https://colonelpanic.tech>
5. <https://github.com/colonelpanichacks/oui-spy>