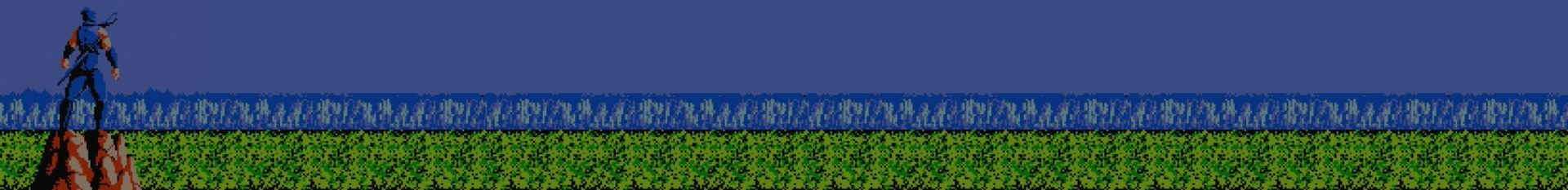
CTF Basics:

Essential Skills for First-Time Competitors

Eddie Miro



In This Talk:

- What is a CTF?
- General Skills Needed
- Categories
- Mini CTF
- Cryptography
- Steganography
- OSINT
- Reverse Engineering
- Miscellaneous
- Other Categories
- How To Prepare
- Resources

What is a CTF?

- Capture the Flag
- Solos/Teams solve challenges to earn points

Types of CTF Formats:

- Jeopardy-style:
  National Cyber League, PicoCTF
- Attack-Defense:
  DEF CON, CCDC
- Boot-to-Root:
  VulnHub, TryHackMe

General Skills Needed for CTFs

- Linux command line
- Networking (e.g., Wireshark)
- Programming (Python, Bash, etc.)
- Problem-solving and creative thinking

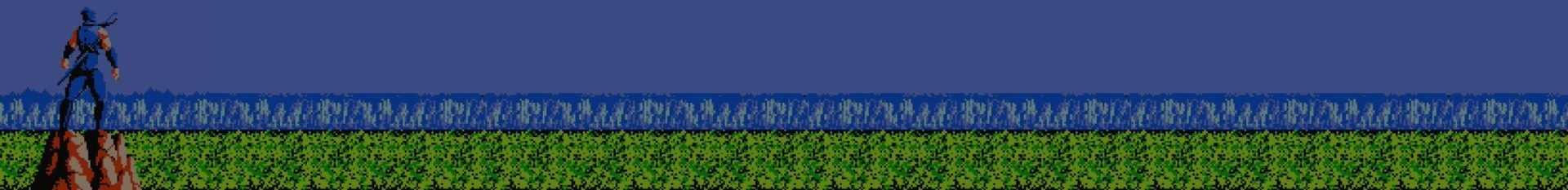
Skills to Practice:

- Googling
- Thinking outside the box
- Perseverance
- Time Management

Categories of CTF Challenges

1. Cryptography
2. Steganography
3. OSINT (Open-Source Intelligence)
4. Reverse Engineering
5. Miscellaneous (Misc)

Each type includes a challenge for you to solve!



The Eddie Miro CTF Talk CTF

Flag format: SAINT-CON-####

mirolabs.info/saintcon-2024-ctf-talk

Cryptography

What it is: Encryption, decryption, ciphers

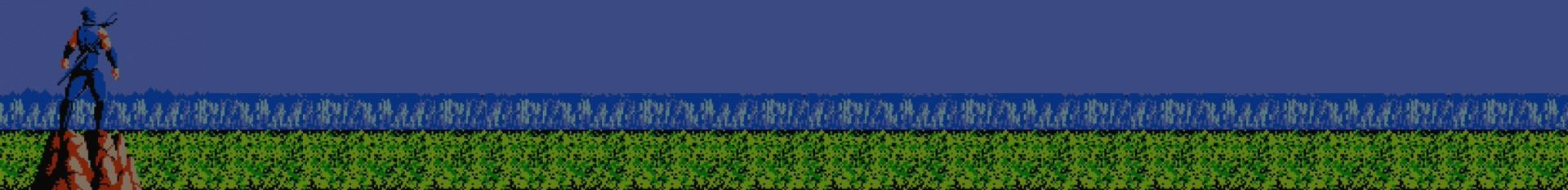
Techniques: Caesar, Vigenère, RSA, XOR, exotic/historical/obscure

Tools:
CyberChef
Cryptool
dcode.fr/en
rumkin.com/tools/cipher/

Challenge 1

Decode this Caesar cipher:

FNVAG-PBA-5357



Steganography

What it is: Hiding data within images, audio, or text

Techniques: LSB (Least Significant Bit), file formats, many more.

Tools:
Steghide
zsteg
binwalk
ExifTool
georgeom.net/StegOnline
aperisolve.com

Challenge 2

Extract hidden text from image

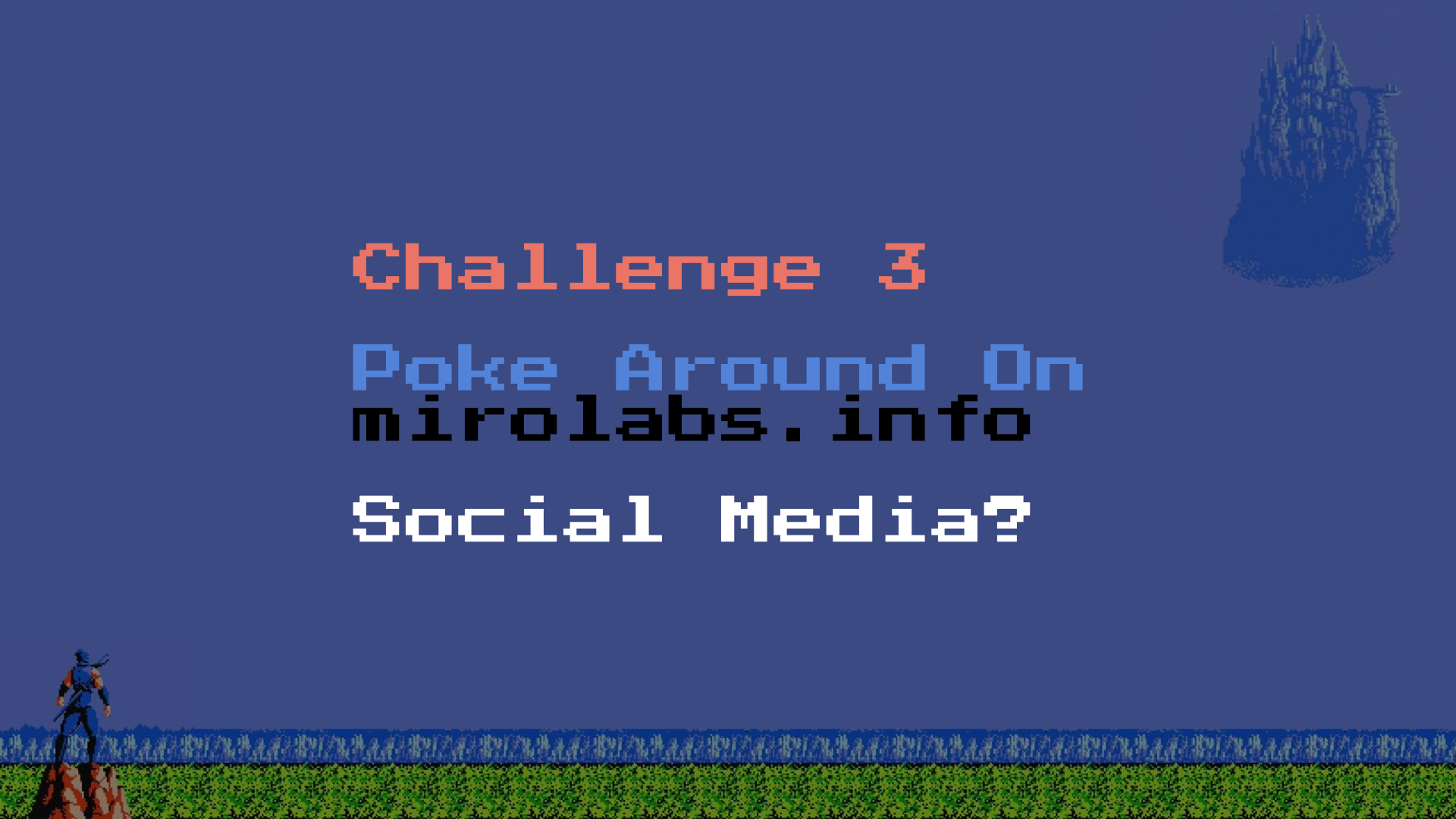
github.com/c1ph0r/SaintCon-2024/blob/main/steganography.png

OSINT
(Open-Source Intelligence)

What it is: Gathering publicly available information to solve challenges.

Techniques: Google dorking, social media analysis, WHOIS lookups, public database searching, Geolocation analysis.

Tools:Maltego, theHarvester, SpiderFoot, Shodan, OSINT Framework, Reverse Image Search,


Challenge 3
Poke Around On
mirolabs.info
Social Media?

Reverse Engineering

What it is: Understanding a program's inner workings

Techniques: Tools like Ghidra, IDA Pro

Tools: Ghidra, IDA Pro, Radare2, x64dbg

Challenge 4

Analyze a simple Python program to find the flag.

github.com/c1ph0r/SaintCon-2024/blob/main/reverse_engineering.py

Miscellaneous

What it is: Challenges that don't fit into other categories, often creative or unconventional.

Techniques: Could involve puzzles, trivia, out-of-the-box thinking, or unique tools.

Tools: Google, ChatGPT

Challenge 5

Password is the 4 digit number for the RFC that covers the Hyper Text Coffee Pot Control Protocol

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Other Categories (Not Covered)

- Binary Exploitation (Pwn)
- Forensics
- Web Exploitation
- Mobile Exploitation
- Networking/Packet Challenges
- Hardware Challenges
- Log Analysis Challenges
- Physical Security Challenges

How to Prepare for a CTF

Practice platforms: Hack The Box, TryHackMe, OverTheWire, CryptoPals, VulnHub, picoGym

CTFTime.org for events

Essential tools: Kali Linux, Burp Suite, Wireshark, Ghidra, Python, pwntools

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