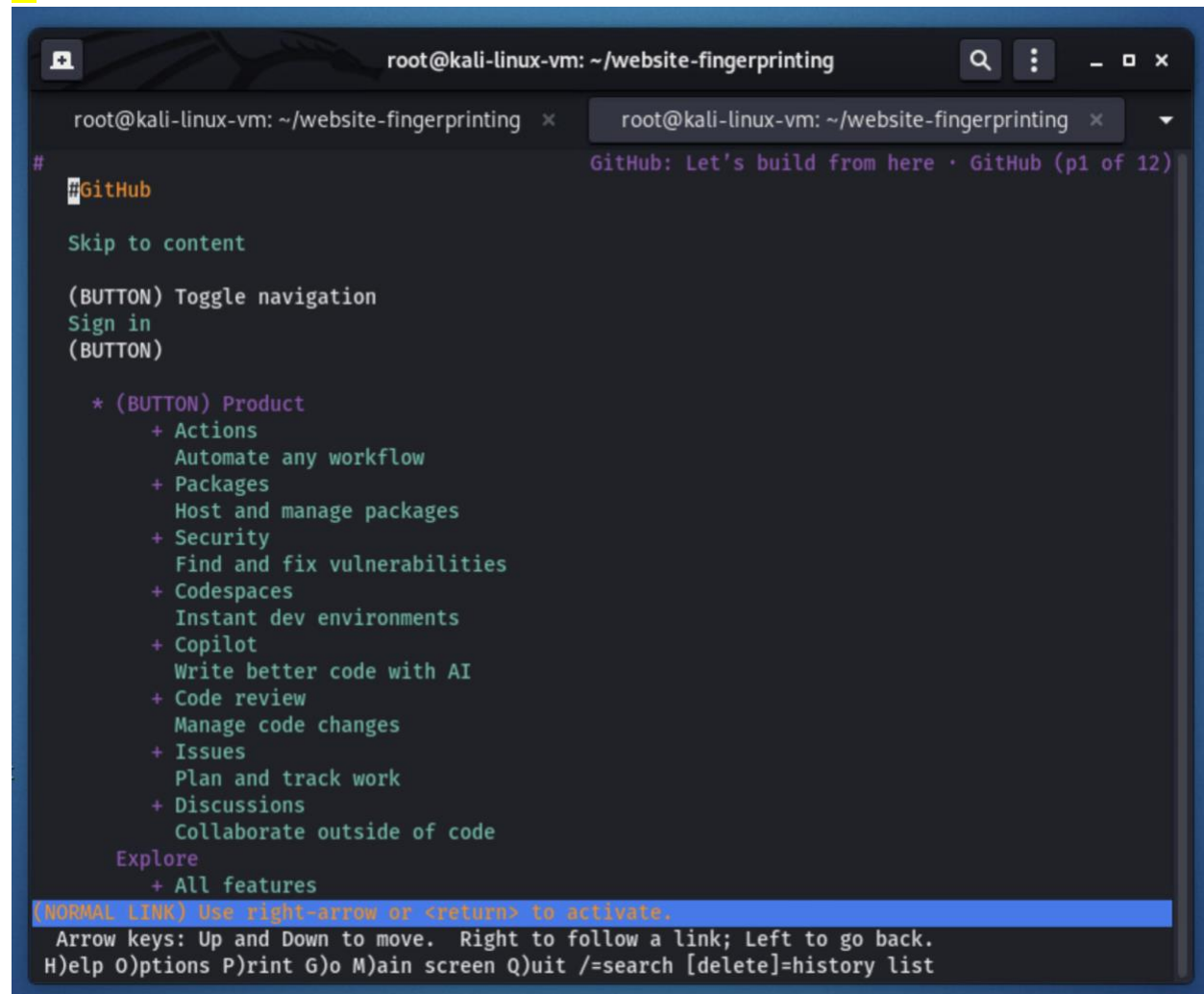


1) Installing lynx and checking it with lynx --version

```
root@kali-linux-vm:~# lynx --version
Lynx Version 2.9.0 (15 Jan 2024)
libwww-FM 2.14, SSL-MM 1.4.1, GNUTLS 3.8.3, ncurses 6.2.20201114(wide)
Built on linux-gnu.

Copyrights held by the Lynx Developers Group,
the University of Kansas, CERN, and other contributors.
Distributed under the GNU General Public License (Version 2).
See https://lynx.invisible-island.net/ and the online help for more information.
```

2) Domain opened in Lynx browser in 2nd terminal



```
root@kali-linux-vm: ~/website-fingerprinting
#
GitHub
Skip to content
(BUTTON) Toggle navigation
Sign in
(BUTTON)
* (BUTTON) Product
  + Actions
    Automate any workflow
  + Packages
    Host and manage packages
  + Security
    Find and fix vulnerabilities
  + Codespaces
    Instant dev environments
  + Copilot
    Write better code with AI
  + Code review
    Manage code changes
  + Issues
    Plan and track work
  + Discussions
    Collaborate outside of code
Explore
  + All features
(NORMAL LINK) Use right-arrow or <return> to activate.
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
H)elp O)ptions P)rint G)o M)ain screen Q)uit /=search [delete]=history list
```

3) Network traffic captured in 1st terminal

```
root@kali-linux-vm: ~/website-fingerprinting
root@kali-linux-vm: ~/website-fingerprinting x root@kali-linux-vm: ~/website-fingerprinting x
CODE_OF_CONDUCT.md LICENSE README.md
config.json mass-capture.sh Scenerio-Website-Fingerprinting.pdf
root@kali-linux-vm:~/website-fingerprinting# ./capture.sh github.com lynx
mkdir: created directory './pcaps'
mkdir: created directory './pcaps/github.com'
PCAPs in ./pcaps/github.com: 0
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
^C69 packets captured
69 packets received by filter
0 packets dropped by kernel
root@kali-linux-vm:~/website-fingerprinting#
```

4) Any website being captured

```
lynx
[Skip to main content]
Reddit - Dive into anything (p1 of 20)
(BUTTON) Open menu Open navigation Go to Reddit Home
(BUTTON) Get app Get the Reddit app Log In Log in to Reddit
(BUTTON) Expand user menu Open settings menu
  * Log In / Sign Up
  * Advertise on Reddit
  * Shop Collectible Avatars
Get the Reddit app
(BUTTON)
Scan this QR code to download the app now
Or check it out in the app stores
r/gaming - Star Wars: Battlefront Modder Finds Further Evidence
Classic Collection Uses Their Mod Despite Aspyr Promising It Wouldn't -
NORMAL LINK Use right-arrow or <return> to activate.
Arrow keys: Up and Down to move. Right to follow a link; Left to go back.
h)elp O)ptions P)rint G)o M)ain screen Q)uit /s=search [delete]=history list

root@kali-linux-vm: ~/website-fingerprinting
root@kali-linux-vm: ~/website-fingerprinting x root@kali-linux-vm: ~/website-fingerprinting x
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
Killing 35795
192 packets captured
192 packets received by filter
0 packets dropped by kernel
[7][Mon Mar 18 05:37:16 PM EDT 2024] Capturing...
PCAPs in ./pcaps/reddit.com: 6
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
Killing 35813
177 packets captured
177 packets received by filter
0 packets dropped by kernel
[8][Mon Mar 18 05:37:36 PM EDT 2024] Capturing...
PCAPs in ./pcaps/reddit.com: 7
tcpdump: listening on eth0, link-type EN10MB (Ethernet), snapshot length 262144 bytes
Got 219
```

5) All websites being captured

```
root@kali-linux-vm: ~/website-fingerprinting
root@kali-linux-vm: ~/website-fingerprinting
root@kali-linux-vm:~/website-fingerprinting# lynx -accept_all_cookies https://github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com google.com
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com google.com reddit.com
root@kali-linux-vm:~/website-fingerprinting#
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com google.com reddit.com torproject.org
root@kali-linux-vm:~/website-fingerprinting# ls pcaps
duckduckgo.com github.com google.com reddit.com torproject.org wikipedia.org
```

6) Accuracy of trainer

```
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33201,RATIO: 0.9730842105263158
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33203,RATIO: 0.9736842105263158
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33204,RATIO: 0.9736842105263158
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33202,RATIO: 0.9736842105263158
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33202,RATIO: 0.9736842105263158
OUT: 38,IN: 37,TOTAL: 75,SIZE: 33201,RATIO: 0.9736842105263158
15 pcap files
- csuohio.edu
OUT: 33,IN: 39,TOTAL: 72,SIZE: 37965,RATIO: 1.18181818181819
OUT: 30,IN: 36,TOTAL: 66,SIZE: 36800,RATIO: 1.2
2 pcap files
Training size: 81
Testing size: 10
Accuracy: 80.0%
root@kali-linux-vm:~/website-fingerprinting#
```

7) Training with more packets will cause the accuracy to go higher. As shown here, the accuracy is 70.0%. It's not too high, so if there's more packets, it would get higher.

8) Prediction obtained: github.com

```
root@kali-linux-vm: ~/website-fingerprinting
root@kali-linux-vm: ~/websit... x root@kali-linux-vm: ~/websit... x root@kali-linux-vm: ~/websit... x
root@kali-linux-vm:~/website-fingerprinting# python3 predict.py pcaps/csuohio.edu/<new .pcap filename>
bash: syntax error near unexpected token `newline'
root@kali-linux-vm:~/website-fingerprinting# python3 predict.py pcaps/csuohio.edu/root/website-fingerpri
nting/pcaps/csuohio.edu/csuohio.edu-03-18-24_17:58:03-lynx.pcap
The input file was not found
root@kali-linux-vm:~/website-fingerprinting# python3 predict.py '/root/website-fingerprinting/pcaps/csu
ohio.edu/csuohio.edu-03-18-24_17:58:03-lynx.pcap'
* Parsing configuration
Loading the classifier...
OUT: 86,IN: 75,TOTAL: 161,SIZE: 45468,RATIO: 0.872093023255814
[[0. 0.8 0. 0. 0.2 0.]]
[2] Prediction: github.com
root@kali-linux-vm:~/website-fingerprinting#
```

9) One month later, the prediction can change. For example, for me the prediction shows up as github.com. Inside the tutorial video, it shows it as google.com and inside of the instructions, the prediction is csuohio.edu. This evidence are proof that predictions can change.