

Lab7 CTF Writeup

孙永康 11911409

Question 1. GO!! Chase the free wave!

[~~-~~] Hackergame 2021 challenge "去吧! 追寻自由的电波"

[+] Inspired by Hackergame. Original created challenge.


[an interesting story]

OK now you have this mp3 file, please find the flag.

[video.mp3](#)

Answer

With help of the hint, I use software `Adobe Audition` to slowdown and reverse the mp3 file. But no matter how I slow down it, I cannot understand the meaning of this mp3. As a result, I use the website to translate it. Then I receive a funny result:

 A new Speech to Text demo is available, check it out [here](#).

Transcribe Audio

- Use your microphone to record audio. For best results, use broadband models for microphone input.
- Upload pre-recorded audio (.mp3, .mpeg, .wav, .flac, or .opus only).
- Play one of the sample audio files.*

*Both US English broadband sample audio files are covered under the Creative Commons license.

The returned result includes the recognized text, word alternatives, and spotted keywords. Some models can detect multiple speakers; this may slow down performance.

Voice Model:

US English broadband model (16KHz)

Keywords to spot:

IBM,admired,AI,transformations,cognitive,Artificial Intelligence,de

☐ Detect multiple speakers



Record Audio



Upload Audio File



Play Sample 1



Play Sample 2

Text

Word Timings and Alternatives

Keywords (0/9)

JSON

Uhhuh uhhuh uhhuh. Uhhuh.

001 003614 2 01
曲: 葬上儀二部

HHHHH, it clearly not the flag. So, I failed to find the flag in this problem.

Question 2. Mechanical Keyboard

Have you faced the situation, that your roommate is playing games so late and the sound of mechanical keyboard is super noisy?

Meanwhile, especially you have midterm exam the next day.

You decide to record this sound and try to find some interesting key taps from your roommate.

(Account password, secret chat with girlfriend, or pxxxhub keywords...)

[dist.zip](#)

Answer

According to the hint, I try to use the online tool. But I failed, since my computer have no microphone. Also, hearing from my classmates, this tool is very slow.

So, I use the demo code to deal with this problems.

```
from scipy.io import wavfile

if __name__ == "__main__":
    sample_rate, data = wavfile.read('./output.wav')

    i = 0
    countsilent = 0
    samplefound = 0

    avg = []
    start = 0
    end = 0
    avg.append([0])

    for sample in data:
        i+=1
        if sample[1]<100:
            countsilent += 1
        if countsilent > 10000 and sample[1]>100:
            countsilent = 0
            #print(str(i)+": sample found")
            start = i
            samplefound = 1
        if countsilent > 8000 and samplefound==1:
            samplefound = 0
            #print(str(i)+": sample ended")
            end = i
            avg[len(avg)-1]=avg[len(avg)-1]/(end-start)
            print("avg: "+str(avg[len(avg)-1]))
            avg.append([0])
        if samplefound == 1:
            avg[len(avg)-1] += sample[1]

    alphabet = "abcdefghijklmnopqrstuvwxyz"
    avg_1 = {}
    i = 0
```

```

res = ""

for value in avg:
    if str(value) not in avg_1:
        avg_1[str(value)] = alphabet[i]
        i += 1
    res += avg_1[str(value)]
print(res)

```

This is the string in this wav file.

abcdefgdbfedhcijkdldkdfdhmnibadklacdabcdojdkdpnkfqggdrccqcedabmljibdabcbdmfnkdp1mdabcd
 pnmoadan cdkndfdscqdfkedabcpqfidnodrhtapdlrckdhmftcd
 ctbfkntfqdqcgghlfmeodfmcqqljedtqlodchmftcdfkedabcdhnmeodscmcdonkinkidnkdnadsfm
 abdabcmcdsfodklidsfgdaldfkantnrfacdsbfadsfodfh1jada1dbfrrcku

Use the given tool to decrypt the code.

Substitution Cipher Solver Tool

abcdefgdbfedhcijkdldkdfdhmnibadklacdabcdojdkdpnkfqggdrccqcedabmljibdabcbdmfnkdp1mda
 bcdpnmoadan cdkndfdscqdfkedabcpqfidnodrhtapdlrckdhmftcd
 ctbfkntfqdqcgghlfmeodfmcqqljedtqlodchmftcdfkedabcdhnmeodscmcdonkinkidnkdnadsfm
 abdabcmcdsfodklidsfgdaldfkantnrfacdsbfadsfodfh1jada1dbfrrcku

Copy Paste Text Options...

Start Manual Solving Auto Solve

Language

English

Instructions Options (for autosolve)

Text

Key

 Click on a letter and then type on your KEYBOARD to assign it.

Auto Solve Results

| Score | Text |
|-------|--|
| 39142 | the s days had s begun sons as brights notes the smuns finally s peeled s through st hes rains for st hes firm ts tie sins as we el sands the sflagsimpspbctfs opens braces echanicalsley board msaresloudsclomes braces and st hes bird ms were smi ngingsinsitmswarths there swam s no sways to s anticipate s what swam s about s to s happen q |

This is what we got, still chaos.

the s days had s begun sons as brights notes the smuns finally s peeled s through
 st hes rains for st hes firm ts tie sins as we el sands the sflagsimpspbctfs opens
 braces echanicalsley board msaresloudsclomes braces and st hes bird ms were smi
 ngingsinsitmswarths there swam s no sways to s anticipate s what swam s about s to s
 happen q

I found the "flags" and two "braces". Fix the mistake between them, make it look better :

mechanical_keyboards_are_loud

So, the flag is: `flag{mechanical_keyboards_are_loud}`.