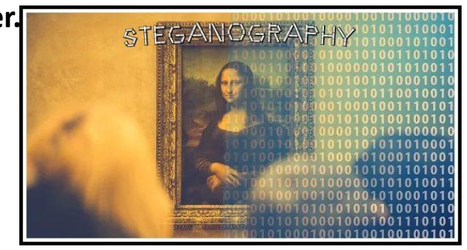
Audio Steganography and Watermark

SWS 3011 —Media protection and steganography

Group 4:
Panyue Wei
Xinyue Wei
Junchao Wang
Jingmiao Zhang

BACKGROUND

Audio steganography is a technique that hides images, text or audio in the original audio and is undetected by th e listener.



It can be applied to the copyright protection of audi o during the Internet communication process.

Our goal:

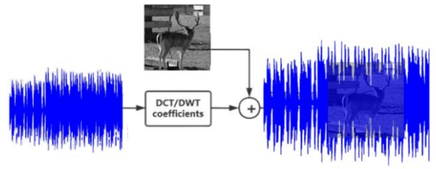
1. Use different wate rmark algorithms to add watermark to au dio and compare the ir robusness

2.Build a security me chanism to keep the watermark safe fro m attacks

METHODS

A Double Ended Scenario

Embed watermark using DCT/DWT/LSB/DWT-LSB

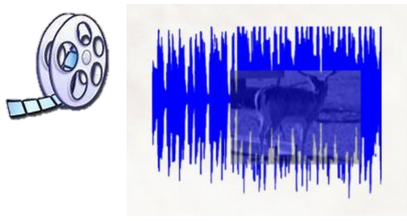


Extract watermark using DCT/DWT/LSB/DWT-LSB

ROBUSTNESS DETECTION

Audio with watermark

Attack this!
Add noise,reverb,merge,cut...



Recover Watermark from the attacked audio

RESULTS

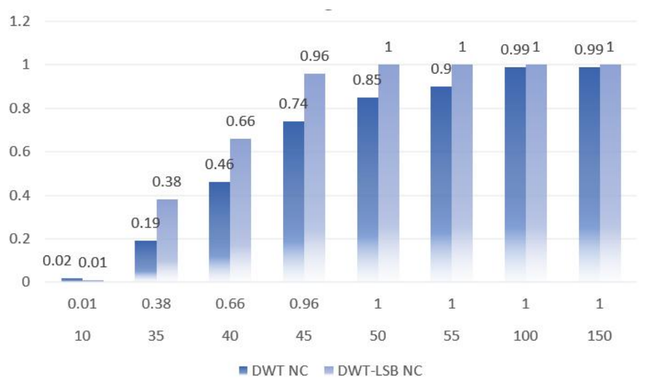
Successfully established Double Ended Scenario to achieve watermark extraction

```
D:\study\abroad\summer\dota\project\txt\venv\Scripts\python.exe
Watermark added successfully.
Watermark extracted successfully.
Comparison succeeded.
```

Test robustness.
The extract watermark at different level of noise:

Only using DWT:

Using DWT-LSB combination :



CONCLUSION

First, we implemented three audio watermark embedding algorithms, LSB, DWT and DCT.

Then, we applied them to two-terminal communication scenarios and proposed a DWT-LSB algorithm optimized based on DWT.

Finally , we compare the robustness of 4 methods. The better robustness of DWT-LSB justifies our improved new method.

SUCCESS