


EchoCrypt AI

"where every echo hides a message."

 Inspired by the wizarding world, EchoCrypt AI is your modern-day Fidelius Charm — encrypting voice & video communication using AI-powered steganography. Like a whisper under the Invisibility Cloak, our echoes carry secrets meant only for those who truly know the magic.





EchoCrypt AI : “where every echo hides a message”

Project Name Agent Noise

Team Name EchoCrypt AI

Problem Statement Digital Privacy and Secure Communication (Employing AI to address social challenges and enhances the accuracy of information).

Our Solution Developed a secure communication system using AI steganography for encrypted voice, ensuring privacy with stealth mode and P2P communication.

Team Member 1 Sampurna Yanda
sampurnayanda9287@gmail.com

Team Member 2 Smrutymayee Rout
routsmruti03@gmail.com

College/University ITER, SOA University



Problem

Issues

Communication is vulnerable to surveillance, interception and censorship. Traditional encryption is detectable

Relevance

It enables security, undetectable messaging with AI steganography, encryption and P2P tech, ensuring privacy.

01010




1010

</>



</>

Solution (Approach, benefits)



AI-Powered Steganography

Embeds confidential information within ordinary media (images, audio) using intelligent AI models, making the transmission unnoticeable to unauthorized observers



End-to-End Encryption

Ensures that data is encrypted from the sender's device and can only be decrypted by the intended recipient, preventing interception or tampering.

Stealth Mode

Operates in a highly discreet manner, minimizing digital footprints and enhancing operational secrecy during communication.

Tech Approach

(Stack & Architecture)



Feasibility & Challenges



Feasibility

Our model is viable with current AI-driven steganography, encryption, and P2P tech.

Challenges

Security Risks,
usability, Real
time processing
and Scalability

Scalability

By optimizing AI models for real-time processing
Enhancing server capacity for high-volume traffic

Impact off the Voice Crypt

⚡ (Benefits & Future Scope) ⚡

Magical Benefits



Protects **privacy** with the strength of ancient enchantments.



Shields vulnerable witches, wizards, and muggles alike.



Scalable like the Room of Requirement – accessible to all.



Reduces **detection**, like a cloak of invisibility for your voice.

Prophecies of Future Scope



Voice Biometric Integration – speak like Parseltongue, only trusted ones understand.



Cross-Platform Expansion – spells work on both enchanted mirrors (phones) and spellbooks (desktops).



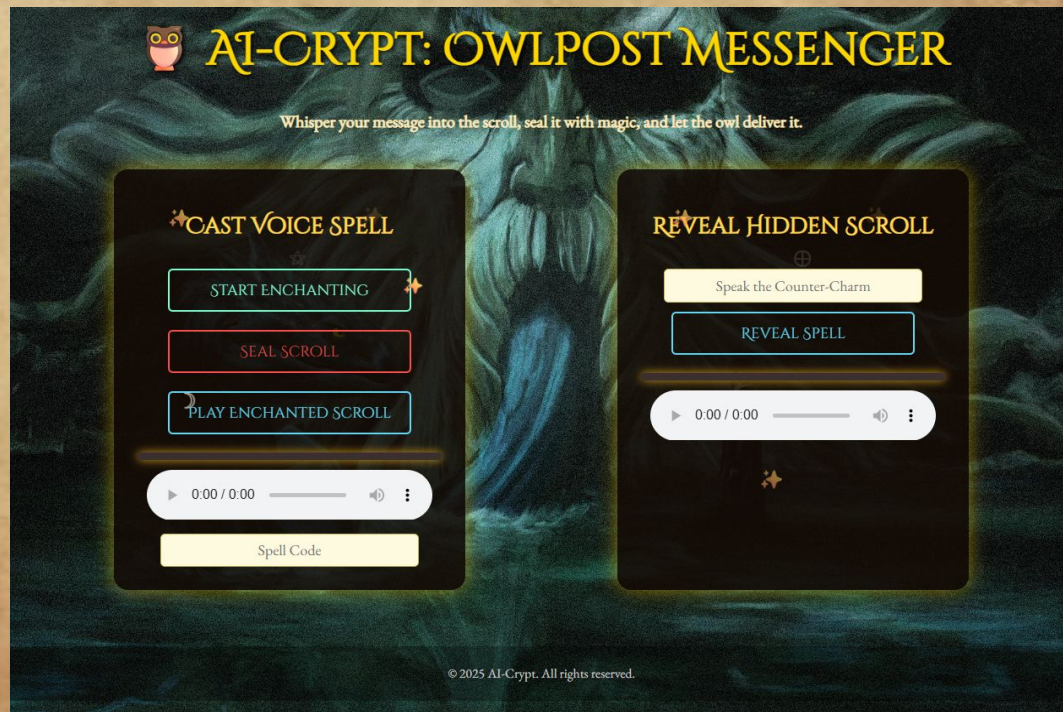
Enhanced Threat Detection – like the Marauder's Map, spotting dark forces early.

Prototype

Training of model

```
Epoch 1/10  
750/750 ————— 14s 10ms/step - loss: 1.1936e-05  
Epoch 2/10  
750/750 ————— 16s 10ms/step - loss: 1.2032e-05  
Epoch 3/10  
750/750 ————— 10s 10ms/step - loss: 1.1812e-05  
Epoch 4/10  
750/750 ————— 8s 11ms/step - loss: 1.1853e-05  
Epoch 5/10  
750/750 ————— 10s 10ms/step - loss: 1.2013e-05  
Epoch 6/10  
750/750 ————— 7s 10ms/step - loss: 1.2188e-05  
Epoch 7/10  
750/750 ————— 11s 10ms/step - loss: 1.1592e-05  
Epoch 8/10  
750/750 ————— 8s 10ms/step - loss: 1.1786e-05  
Epoch 9/10  
750/750 ————— 10s 10ms/step - loss: 1.1800e-05  
Epoch 10/10  
750/750 ————— 10s 10ms/step - loss: 1.2084e-05  
<keras.src.callbacks.history.History at 0x78929e72d350>
```

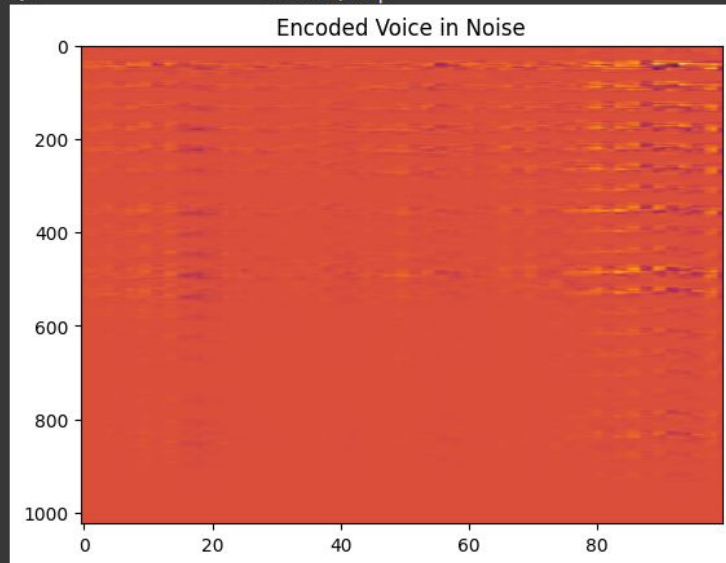
Mock-up Page of our model



Encrypted Audio

```
encoded_sample = encode_voice_in_noise(voice_spectrograms[0], noise_spectrograms[0])  
plt.imshow(encoded_sample.squeeze(), aspect='auto', cmap='inferno')  
plt.title("Encoded Voice in Noise")  
plt.show()
```

1/1 ————— 1s 659ms/step

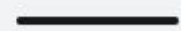


A voice hidden in noise — pure, undetectable magic

```
import IPython.display as ipd  
  
# Play the encoded audio  
ipd.Audio("encoded_audio.wav")
```



0:03 / 0:03



Mischeif Managed

Thank you for joining us on this enchanted journey through the art of whispering in silence .



“Let your echoes hide your truth, until it reaches the one who truly listens.”

– Team EchoCrypt AI