Speech Audio File Encryption using Hash Function and Rijndael Algorithm

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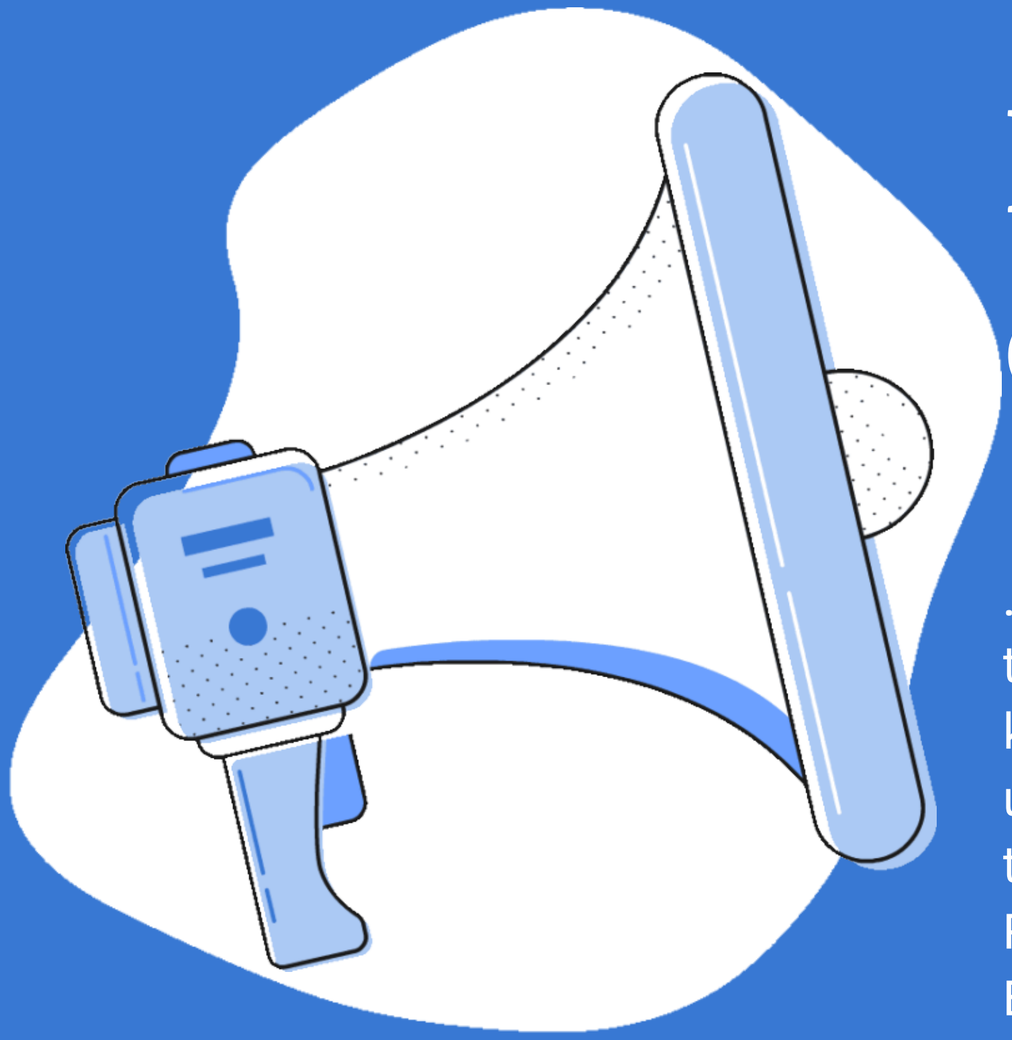
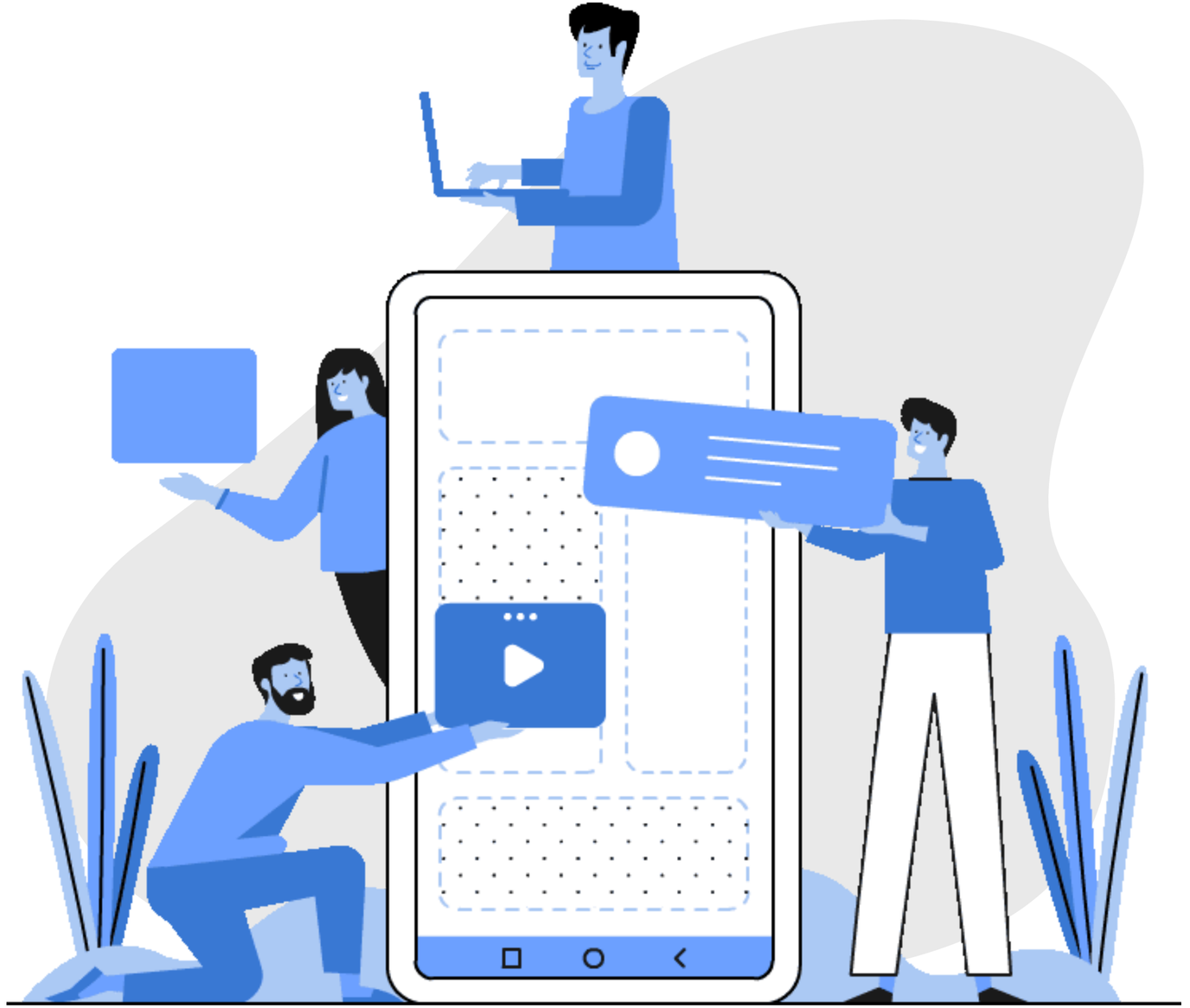


Purpose of audio encryption?

. The proposed system is to convert speech audio file to text form, this text creates a password seed with two keys using a hash function, the first key is encrypted using the proposed algorithm then these keys are used to encrypt the original audio (.WAV) file by using Rijndael algorithm. Keywords. Speech audio file; Encryption; Decryption; Audio; Hash function; Rijndael algorithm Speech Recognition

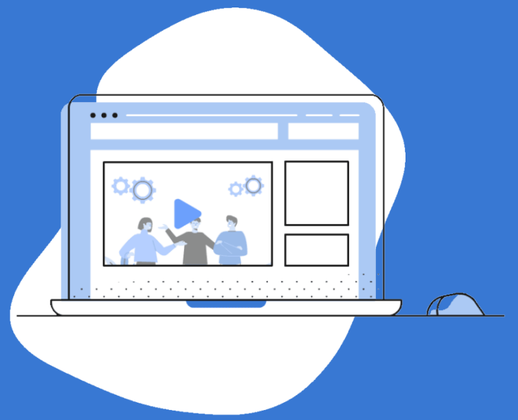
Is voice as password secure?

Voice authentication is more secure than other authentication methods because it uses a person's unique voiceprint to identify them. This means someone else can't use your voiceprint to access your account, unlike other biometric identifiers.



4 component of encryption

(1) plaintext
(2) encryption algorithm



(3) key (works like the safe's combination).
(4) ciphertext

Proposed System

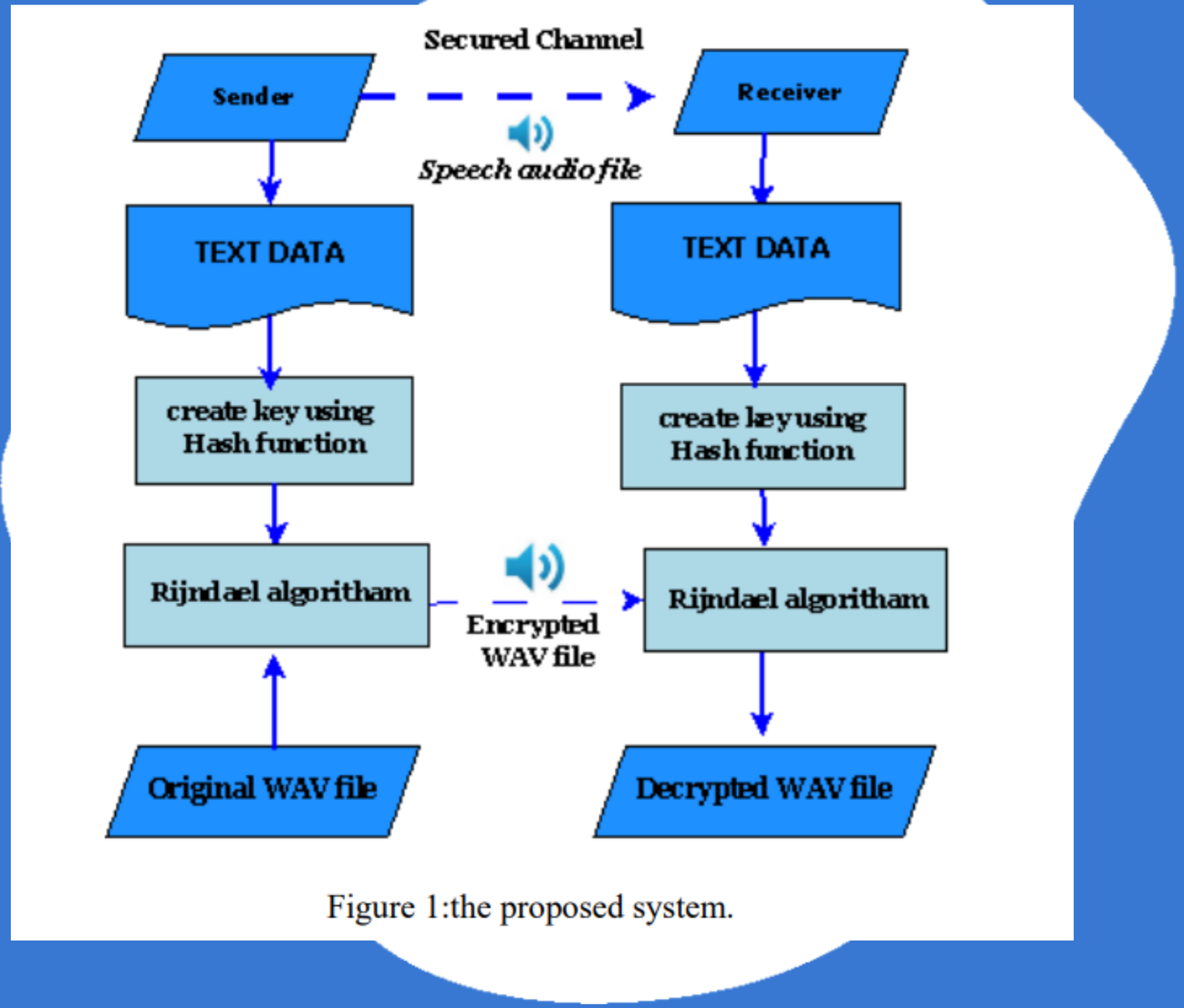
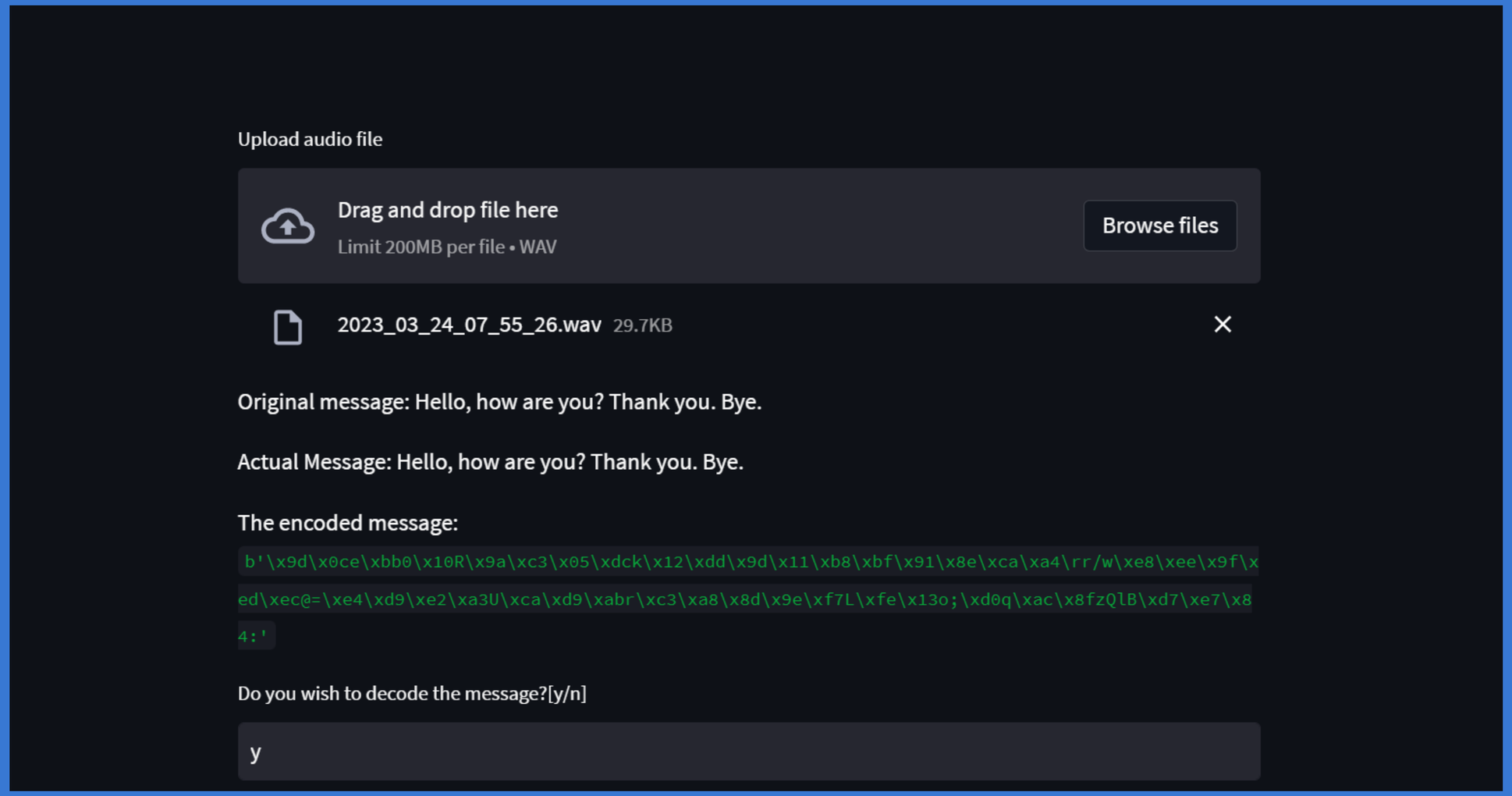


Figure 1:the proposed system.



https://enigmatic-shadow-cryptocrypt-app-mv4pb1.streamlit.app/

Process

01 Generate Password Key

02 Encrypt audio file

03 Decrypt audio file

Conclusion

A new encryption algorithm is proposed for audio (.WAV) files using a two secret keys by converting speech audio file to text form; this text creates a seed with two keys using the hash function then encrypts the original audio file by using Rijndael algorithm. The results for all tested audio files show that the proposed algorithm for audio files is secured because of its, uniform histograms, large keys space , low correlation, and low PSNR, showing that the proposed algorithm for encryption of the audio file is a very good choice in the same time is a very good security to audio transmission.

Thank you