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A Voice Signal Encryption Scheme Based on Chaotic Theory

Authors : Hailang Yang

Abstract : To ensure the confidentiality and integrity of speech signals in communication transmission, this paper proposes a voice signal encryption scheme based on chaotic theory. Firstly, the scheme utilizes chaotic mapping to generate a key stream and then employs the key stream to perform bitwise exclusive OR (XOR) operations for encrypting the speech signal. Additionally, the scheme utilizes a chaotic hash function to generate a Message Authentication Code (MAC), which is appended to the encrypted data to verify the integrity of the data. Subsequently, we analyze the security performance and encryption efficiency of the scheme, comparing and optimizing it against existing solutions. Finally, experimental results demonstrate that the proposed scheme can resist common attacks, achieving high-quality encryption and speed.

Keywords : chaotic theory, XOR encryption, chaotic hash function, Message Authentication Code (MAC)
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