Abstract

In this paper, we present a new voice encryption for voice communication system. It is based on permutation and substitution of voice samples using transform domains and secret keys in time. To increase the security we design the system such that it is multilevel in the sense that two chaotic maps are used. This provides the encrypted signal with a high degree of confidence. The Arnold cat map is applied to a permutation of the samples, The Henon map is employed in key generation to generate mask keys to be used in the substitution process. The results show that the encryption system provides the speech signal with a high degree of confidence, key sensitivity and high quality recovered signal. Total key space for the proposed encryption system is larger than \(2^{425}\), which is large enough to protect the encrypted signal against attack.

Index Terms

Computer Science

Signal Processing
Keywords

Voice encryption, Henon map, Arnold cat map, Permutation, Substitution.