DNA Secret Writing with Laplace Transform

Abstract

A symmetric key cryptographic system has been proposed and it is termed as DSWLT. This proposed technique is very fast, suitable for encryption of large files. DSWLT consider the plain text (i.e. the input file) as binary string with finite no of bits. The input string converted to DNA nucleotides using DNA coding and then the DNA codes are converted to positive integers. Laplace transform is applied considering these numbers to be the co-efficient of the expansion. To provide multilevel security the resultant coefficients are converted to their binary equivalent and another level of encryption with cumulative XOR is performed and respective MSBs found at every iteration are taken to construct the cipher text. Decryption is performed in the reverse manner. Experimental results are tested, analyzed and a comparison with existing and industrially accepted TDES and AES has been performed.

References

- G. Z. Cui, L. M. Qin, Y. F Wang and X. C. Zhang, "Information Security
DNA Secret Writing with Laplace Transform

- Pankaj Rakheja, "Integrating DNA Computing in International Data Encryption Algorithm (IDEA)," International Journal of Computer Applications, pp 1 – 6, Volume 26, No. 3, July 2011

**Index Terms**

Computer Science

Applied Sciences

**Keywords**
DNA  DNA Cryptography  Laplace Transform  Symmetric key Cryptography
Cumulative XOR
Most Significant Bit
Serial Test
Monobit Test
Frequency Test