

An Advanced Data Security Algorithm Using cryptography and DNA-Based steganography

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Abstract—nowadays, data security has become one of the most important branches of computer sciences because of the great development in the Internet field and the great need to exchange information over the Internet. Cryptography is to protect the content of messages. The main problem in cryptography is that the data is not hidden. Although the data cannot be read, but it still exists so, someone can decrypt it. Steganography is about concealing the data existence. In this paper a new approach is introduced to ensure the secrecy and integrity of data transported over computer networks. The paper describes how cryptography and steganography were combined to produce higher level of security. Advanced Encryption Standard (AES) is used to encrypt data and a steganography technique is used to insert encrypted data in the deoxyribonucleic acid (DNA) sequence and then apply the central dogma of the molecular biology processes which converts DNA form to ribonucleic Acid (RNA) form then to protein form. The proposed technique was applied successfully.

Keywords—*cryptography; steganography; DNA-based steganography; Transcription; Translation.*