Enhancement of Information Security Using Music Theory and Attributes

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The Internet is the fastest medium of information exchange. Internet and its technologies have replaced the traditional way of information exchange with the advancement of information and communication technology. In this electronic communication era, the demand for securing information exchange is highly needed and appreciated. Music and its attributes such as harmony, tone, pitch, and scales have been used in cryptography from the early days. Presently, music is vastly used in information hiding with the use of steganography. The art of encrypting and covering messages using music is termed as Musical Steganography. Further, musical notes and symbols have been used as codes and keys. The hiding is implemented by designing an algorithm for hiding a bit formatted message into music using its attributes before they encrypted into a format to transmit through Internet. In this paper, we propose an algorithm converts the bit into musical notes by mathematical properties. The sequence of musical notes generated for the particular bit sequence is a musical pattern. Particularly, a brief implementation of the security algorithm is made as a merged technique for information security. In addition, the algorithm uses two-level security measures: one using the Musical Cryptography and the other with Musical Steganography techniques to improve the security of the information. This study vividly proves that the information that is encrypted using the above algorithm is very well secured than the other mechanisms by the two level security systems. Therefore, these increase the security of the message and the proposed scheme is used for safe data communication. Further, this paper focuses on the strength of combining security techniques to secure the communication over an open channel by encrypting bit formatted of any form of message before its transmission.

Key words: Cryptography, information security, information hiding, Musical steganography