



INTISARI

ENKRIPSI CITRA DIGITAL BERBASIS KOMBINASI CHAOTIC MAP DAN DNA ENCODING

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Data citra digital dapat dienkripsi terlebih dahulu sebelum ditransmisikan demi menjamin keamanannya. Banyak algoritme enkripsi yang sudah digunakan untuk mengamankan data citra digital. Salah satunya adalah enkripsi berbasis *chaotic map*. Enkripsi berbasis *chaotic map* memberi kecepatan enkripsi yang tinggi, namun masih rentan terhadap serangan berupa *statistical attack*. Enkripsi berbasis *DNA Encoding* dapat menjadi alternatif untuk dikombinasikan dengan enkripsi berbasis *chaotic map*.

Penelitian ini membandingkan kinerja enkripsi berbasis *substitution chaotic map (Logistic map)* dan *permutation chaotic map (Arnold Cat map)* dengan mengimplementasikan *DNA Encoding* pada masing-masing algoritme. Hasil enkripsi dari masing-masing algoritme, dibandingkan berdasarkan nilai korelasi, entropi, histogram dan waktu pemrosesan.

Hasil penelitian menunjukkan rata-rata nilai korelasi algoritme enkripsi berbasis *logistic map-DNA encoding* sebesar 0,0014 sedangkan enkripsi berbasis *Arnold cat map-DNA encoding* sebesar 0,0109. Hal ini menunjukkan algoritme enkripsi berbasis *logistic map* lebih aman ketika dikombinasikan dengan *DNA encoding* dibandingkan enkripsi berbasis *Arnold cat map*.

Kata kunci : Enkripsi, Citra digital, Chaos, Logistic map, Arnold Cat map, DNA Encoding



ABSTRACT

DIGITAL IMAGE ENCRYPTION METHOD BASED COMBINATION CHAOTIC MAP AND DNA ENCODING

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Digital image data can be encrypted before being transmitted to ensure its security. Many encryption algorithms have been used to secure digital image data. One of them is chaotic map based encryption. Chaotic map-based encryption provides high encryption speeds but is still vulnerable to attacks in the form of statistical attacks. DNA Encoding-based encryption can be an alternative to be combined with chaotic map-based encryption.

This study compares the performance of encryption-based substitution chaotic map (Logistic map) and permutation chaotic map (Arnold Cat map) by implementing DNA Encoding on each algorithm. The encryption results from each algorithm are compared based on correlation values, entropy, histogram, and processing time.

The results showed an average encryption algorithm correlation value based on logistic map-DNA encoding of 0.0014 while encryption based on Arnold cat map-DNA encoding was 0.0109. This shows the encryption algorithm based on logistic map is safer when combined with DNA encoding compared to encryption based on Arnold cat map.

Keywords: Encryption, Digital image, Chaos, Logistic map, Arnold Cat map, DNA Encoding