

Enkripsi citra digital menggunakan tangent logistic map = Digital image encryption using tangent logistic map

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Abstrak

Saat ini kemajuan teknologi berkembang sangat pesat. Salah satunya yaitu teknologi informasi dan komunikasi. Pengiriman dan penerimaan informasi menjadi sangat mudah, namun hal tersebut tidak serta merta berjalan aman. Berkembangnya teknologi informasi dan komunikasi pun diiringi oleh kejahatan seperti penyadapan informasi. Untuk itu dibutuhkan algoritma untuk mengamankan informasi, salah satu caranya yaitu dengan menerapkan ilmu kriptografi. Metode yang digunakan yaitu metode enkripsi. Menggunakan konsep teori chaos, dengan fungsi tangent logistic map. Pengujian terhadap algoritma enkripsi menggunakan tangent logistic map ini menghasilkan ruang kunci sebesar $10^{8308};^{8309}$; dan sensitivitas kunci mencapai $10^{8315};^{8310}$; sehingga sulit dipecahkan oleh brute force attack. Disamping itu, distribusi dari nilai-nilai pixel citra hasil enkripsi terbukti uniform serta berdasarkan uji NIST (National Institute of Standard and Technology) keystream yang dihasilkan pun terbukti acak dengan $0.97^{8805};1\%$ sehingga sulit dipecahkan oleh known plaintext attack.

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Nowadays, advance in technology is growing very rapidly, as well as information technology and communication. Sending and receiving information become very easy but it is not necessarily secure because it is also accompanied by crime, such as cracking the data/ information. Therefore we need an algorithm to secure the data/ information, one way is applying cryptography theory, with an encryption method and the concept of chaos theory using tangent logistic map. Some of the results of tests performed on this encryption algorithm using tangent logistic map are key space is about 10^{45} ; the sensitivity level is about $10^{722};16$, so that this algorithm has a high resistance to bruteforce attack. Besides that, the histogram is almost flat and based on the results of NIST (National Institute of Standard and Technology) tests, this algorithm produces random number, shown by $0.97^{8805};0.0$, so that this algorithm has also a high resistance to known plaintext attack.