Multilevel Gray Scale Image Encryption through 2D Cellular Automata

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Abstract : Cryptography is the science of using mathematics to encrypt and decrypt data; the data are converted into some other gibberish form, and then the encrypted data are transmitted. The primary purpose of this paper is to provide two levels of security through a two-step process, rather than transmitted the message bits directly, first encrypted it using 2D cellular automata and then scrambled with Arnold Cat Map transformation; it provides an additional layer of protection and reduces the chance of the transmitted message being detected. A comparative analysis on effectiveness of scrambling technique is provided by scrambling degree measurement parameters i.e. Gray Difference Degree (GDD) and Correlation Coefficient.