A RESISTANT *WATERMARKING* IN THE FREQUENCY DOMAIN OF DIGITAL IMAGES FOR SECURE AUTHENTICATION THROUGH CELLULAR AUTOMATA

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ABSTRACT

This work presents an authentication procedure for copyright protection of digital images that combines different methods of digital watermarking and encryption. In order to ensure that the authentication procedure is robust, imperceptible, and resistant to various intentional and unintentional attacks, the proposed approach works in the frequency domain of digital images and uses the *Discrete Cosine Transform* (DCT). To add a higher level of protection and security to the watermarked digital image, the message to be inserted is encrypted using the author's password and the Cellular Automata method. The inserted message is resistant to the JPEG compression and to Gaussian and *Salt-and-Pepper* noises and filters. The message can be extracted from the watermarked image by the strictly usage of the author's password, so as to verify the authenticity.

Keywords: Digital watermarking, Discrete Cosine Transform, Cellular Automata, Gaussian Noise, Salt-and-Pepper Noise.