# Image Authentication and Restoration by Multiple Watermarking Techniques with Advance Encryption Standard in Digital Photography

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**In the past few years, semi-fragile watermarking techniques have become increasingly important to secure and verify the multimedia content and also to localize the tampered areas, while tolerating some non-malicious manipulations or attacks. In digital photography, the watermarking schemes are very important for copyright protection purpose. In this paper, a multimedia authentication and restoration scheme is proposed with the security of AES-128 ciphered watermarking and correlated watermarking. An encrypted or ciphered image embedding is done by modified version of Closest Point Transform (CPT) in a digital photograph. We performed several security attacks e.g. noise attack, compression attack, and cropping attack on multiple watermarked photographs and evaluated the proposed watermarking technique to examine the system robustness. Image Authentication is done by locating the tempered areas and restoration is performed by correlated watermark on the tempered region of watermarked photograph. The PSNR values are checked to evaluate the proposed watermarking technique. The results of PSNR, MSE, and SSIM show that the imperceptibility of our scheme is high compared to existing methods.**

***Keyword*— Multimedia authentication, image restoration, multimedia security, digital photography, noise attacks, cropping attack, compression attack, Advance Encryption Standard (AES)**

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