An Enhanced Data Hiding Approach using Pixel Mapping Method with Optimal Substitution Approach

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Abstract

Data Hiding is one of the challenging issues in the field of Network Security. Unlike cryptography, Steganography is used to hide the existence of secret message by embedding the message behind any cover object like image, text, audio, video files. Various authors proposed, various methods for hiding secret information behind gray scale images such as least significant method, gray level modification, pixel value differencing, pixel mapping method and pixel mapping method with BPCS, but all these method are not up to the marks that means increasing the embedding capacity of Stego-Image and to provide Stego-Image with an imperceptible quality are still challenges. To get better imperceptible quality, we proposed an enhanced technique "An Enhanced Data Hiding Approach Using Pixel Mapping Method (PMM) With Optimal Pixel Substitution Approach" that provides a better Peak Signal to noise ratio (PSNR) between Cover-Image and Stego-Image with good embedding capacity. The proposed approach is based on four modules – mapping rules, set classifier method, pixel selection method, and minimum differencing function to hide data within an image. This method works by selecting a set of pixels; map secret data into these selected pixels according to mapping rules and produces new Stego pixel value after mapping secret message according to Minimum Pixel Difference function. This integrated proposed approach provides more security to secret data as without knowing the mapping rules and locations of pixels no one could extract
the secret data. This proposed approach not only provides larger embedding capacity but also produces an acceptable Stego image quality that can be seen by human eyes.

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