# IMPROVED WATERMARKING SCHEME BASED ON BEST COLOR CHANNEL SELECTION USING DISCRETE SLANTLET TRANSFORM

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This dissertation is dedicated to my family for their endless support and encouragement.

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# ABSTRACT

Digital watermarking is a process to embed the secret information into digital data for verifying identity of the owners by making assertion about the data and image authentication applications that provide security to watermark, W which is converted to a sequence of random binary R of size n adopted to encrypt the watermark. The adaptation process uses a pseudo-random number generator to determine the pixel to be used on a given key. The digital watermarking is created as a method to solve this kind of problems. There are two issues which are embedded watermark image in the host image without causing any kind of degradation, achieve and improve both imperceptibility and robustness of watermarked image before and after attacks. In this thesis, The RGB colour image watermarking is proposed using by Discrete Slantlet Transform (DST) to generate higher degree of robustness and imperceptibility of watermarked image. After applying 2-level DST on the host image to divided Red, Green and Blue select the best channel to embedding. The experimental results show that the proposed approach provides extra imperceptibility, robustness and security against JPEG compression and different noises attacks compared to the previous methods. The robustness of the proposed image is evaluated by calculating the Normalized Cross Correlation (NCC) value of watermarked before and after the image process. After applying the proposed approach the results proved that the way The Peak Signal-to-Noise Ratio (PSNR) and NCC values were greater than 30 db and 0.6, respectively.

# ABSTRAK

Mekatronik Digital adalah satu proses untuk menerapkan maklumat rahsia ke dalam data digital untuk mengesahkan identiti pemilik dengan membuat penegasan tentang data dan aplikasi pengesahan imej yang menyediakan keselamatan untuk watermark, W yang ditukar kepada rentetan perduaan R rawak saiz n pakai untuk menyulitkan watermark. Proses penyesuaian menggunakan penjana nombor pseudo-rawak untuk menentukan pixel yang akan digunakan pada Mekatronik digital key. The diberikan diwujudkan sebagai satu kaedah untuk menyelesaikan ini jenis masalah. Terdapat dua isu yang tertanam imej watermark dalam gambar tuan rumah tanpa menyebabkan sebarang kemusnahan, mencapai dan meningkatkan kedua-dua imperceptibility dan kekukuhan imej tera air sebelum dan selepas serangan. Dalam tesis ini, The RGB warna imej Mekatronik adalah dicadangkan menggunakan oleh Slantlet MPEG (DST) untuk menjana tahap yang lebih tinggi keteguhan dan imperceptibility imej tera air. Selepas menggunakan DST 2-tingkat pada gambar tuan rumah untuk dibahagikan Merah, Hijau dan Biru pilih saluran yang terbaik untuk menerapkan. Keputusan eksperimen menunjukkan bahawa pendekatan yang dicadangkan memperuntukkan imperceptibility tambahan, kemantapan dan keselamatan terhadap pemampatan JPEG dan bunyi yang berbeza serangan berbanding sebelumnya kaedah. Keteguhan imej yang dicadangkan adalah dinilai dengan mengira Korelasi Cross (NCC) Nilai Dinormalkan daripada tera air sebelum dan selepas proses imej. Selepas menggunakan pendekatan yang dicadangkan keputusan membuktikan bahawa cara Nisbah Isyarat -Hingar Puncak (PSNR) dan nilai-nilai NCC adalah lebih besar daripada 30 db dan 0.6.