

**PERLINDUNGAN HAK CIPTA CITRA RABBANI DENGAN TEKNIK  
WATERMARKING MENGGUNAKAN METODE CRT PADA DETEKSI  
TEPI CANNY**

**RISKA HANUM RAHMAWATI**

(Pembimbing : Aisyatul Karima, S.Kom, MCS)

*Teknik Informatika - S1, FIK, Universitas Dian Nuswantoro*

*www.dinus.ac.id*

*Email : 111201307822@mhs.dinus.ac.id*

**ABSTRAK**

Munculnya masalah manipulasi citra membuat khawatir beberapa pihak, padahal pemerintah Indonesia sudah mencanangkan peraturan yang sudah tertulis dalam sebuah UUHC (Undang-Undang Hak Cipta). Teknik watermarking merupakan salah satu solusi menghindari penyalinan yang tidak sah. Baru-baru ini banyak skema watermarking yang telah diajukan untuk mengatasi masalah ini. Tujuan dari penelitian ini adalah menerapkan teknik watermarking Chinese Remainder Theorem (CRT) untuk pelabelan hak cipta. Sebelum dilakukan penanaman watermark, citra Rabbani di preprocessing terlebih dahulu menggunakan metode deteksi tepi Canny untuk mengetahui tepi dan batas-batas pada citra. Pada pengukuran kualitas citra menggunakan SSIM, ternyata metode CRT pada deteksi tepi Canny mampu meningkatkan kualitas citra watermark secara signifikan dengan rata-rata 0.99942 dibandingkan dengan metode CRT yang hanya memiliki rata-rata 0.99857. Saat diberi serangan pengolahan citra, CRT pada deteksi tepi Canny mampu mempertahankan robustness terhadap serangan dengan rata-rata kompresi 0,66187 dan noise 0.940243 sedangkan metode CRT hanya memiliki rata-rata kompresi 0,544797 dan noise 0.939963. Ini berarti metode yang diusulkan mampu mengoptimalkan tingkat robustness dan imperceptibility.

Kata Kunci : Watermarking, CRT, Canny, SSIM, NC

## **RABBANI IMAGE COPYRIGHT PROTECTION WITH WATERMARKING TECHNIQUE USING CRT METHOD ON CANNY EDGE DETECTION**

**RISKA HANUM RAHMAWATI**

(Lecturer : Aisyatul Karima, S.Kom, MCS)

*Bachelor of Informatics Engineering - S1, Faculty of Computer  
Science, DINUS University*

*www.dinus.ac.id*

*Email : 111201307822@mhs.dinus.ac.id*

### **ABSTRACT**

The higher emerge of image manipulation problem has caused a worried among companies or parties. Despite Indonesian Government already enacted a rule related to Copyright regulation (UUHC). Watermarking technique is one of many solutions to prevent unauthorized copying. Recently many watermarking schemes have been proposed to solve this real problem. The purpose of this research is to apply a watermarking technique of Chinese Remainder Theorem (CRT) for copyright labeling. The first step of applying this technique is to Pre-process the Rabbani image using Canny edge detection method to find out the edge and boundaries in the image itself. Then the next step is measuring image quality using SSIM, it turns out that CRT method on Canny edge detection can improve watermark image quality significantly with an average of 0.99942 compared with CRT method which has only average 0.99857. When given an image-processing attack, CRT on edge detection Canny is able to maintain robustness against the attack with compression in the average of 0.66187 and noise in about 0.940243 whereas CRT method has only average compression to 0,544797 and noise in about 0.939963. This means the proposed method able to optimizes the level of robustness and imperceptibility.

Keyword : Watermarking, CRT, Canny, SSIM, NC