

<b>Thesis Title</b>	Image Watermarking Technique Using Overlapped Block
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### **ABSTRACT**

An image watermarking technique using overlapped block is proposed in this thesis. The proposed method uses a binary watermark image, which is permuted before being embedded into an 8-bit gray host image. To embed a watermark bit into the host image, the representative watermark block of size 3x3 with 9 predefined weights is used to add/subtract its weights to/from the pixel intensities inside corresponding 3x3 image block. These 3x3 watermark blocks have their center pixels located at every other pixel and every other line of the host image, so each block overlaps each other. Therefore, the binary watermark image size is approximately as large as a quarter of the host image. The abruption between any two blocks is smoothed by the use of the overlapped block. In the proposed method, the value of the center weight is determined adaptively depending on the contrast of the block in the host image. This makes the watermark image robust for some lossy image processing operations even though the host image is small, such as the image used in a cell phone. In addition, its simple algorithm makes it easy to implement. Experimental results show the effectiveness of the proposed watermarking method without introducing any distortion.

The weights of watermark block used in the proposed method could be adjusted to compromise between robustness and invisibility of the watermark. Furthermore, their values will be determined adaptively by the standard deviation of the corresponding image block. As the result, the proposed technique is fast, suitable for any sizes of the host image, and robust against most common image processing operations, i.e., Low pass Filter, Median Filter, 50% Scale Down, JPEG Compression with quality at 100, 75, 50, 25, Crops and Rotation.