

Thesis Title	Image Compression Using Reordering and Grouping
Thesis Credits	12
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Degree of Study	Master of Engineering
Department	Electrical Engineering
Academic Year	1999

Abstract

Image data compression is a scheme of data-storage size reduction. Image data consists of information and redundancy. For the lossless compression, there is no partial reduction on information while performing the redundancy elimination. Compression efficiency depends on the quantity of redundancy elimination. An image owning lower redundancy has less compression efficiency than an image owning higher redundancy because of the low quantity of redundancy elimination. Since the higher quantity of redundancy elimination can make the compression more efficient, this thesis proposes a new image compression method using redundancy increasing. The first stage of this method is called reordering procedure. It consists of image data matrix's row-reordering and image data matrix's column-reordering. The aim of reordering is to group pixel data which have same values '0' and '1' for increasing image's smoothness (a characteristic of an image that each pixel and its neighboring pixels have same value). The image has more redundancy because the redundancy relates with smoothness of an image. Subsequently, the second stage, merging procedure reduces redundancy increased in the first stage. This process attempts to merge pixel groups in which all pixels have same value '0' and '1'. All groups are

replaced by numerical symbols, which use less bits. Merged data are a group of symbols, and they are compressed again by appropriate technique in order to reduce recurring pattern in the group.

This method is performed with black and white image coming from gray level image in several threshold levels. The experimental results confirm compression efficiency of this performing technique that is better than other existing techniques about 8-12 % .

Keywords : Binary Image Compression / Lossless Data Compression /
Redundancy Increment / Boolean Algebra / Binary Decision Diagram