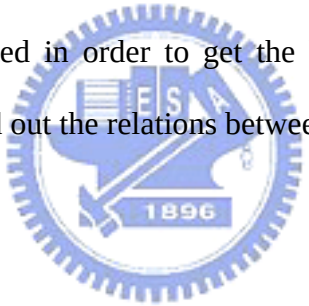
Chapter 1
Introduction

1.1 Motivation

Wavelets have attracted a lot of interests in recent years. JPEG2000 standard for image compression that uses the Cohen-Daubechies-Fouveau (CDF) biorthogonal 9/7 DWT filter pair, and quantizes the wavelet coefficients with a different step-size for each subband, is one of the practical uses of wavelets [1] [2].

In a wavelet-based image compression system, choice of the wavelets is important to the final performance. Wavelet families, filter orders, and number of decompositions can be adjusted in order to get the best compression results for a certain image. We want to find out the relations between each other.



1.2 Previous Works

This paper is inspired by Grgic et al [3] [4] [5] [6]. They presented results from a comparative study of different wavelet-based image compression systems. The effects of different wavelet functions, filter orders, number of decompositions, image contents, and compression ratios are examined.

Makoto Miyahara, Kazunori Kotani, and V. Ralph Algazi in [7] [8] indicated that a new methodology for determination of an objective metric for still images coding. This methodology is applied to obtain a picture quality scale (PQS) for the coding of achromatic images over the full range of image quality defined by the subjective mean opinion score (MOS). This PQS takes into account the properties of visual

perception for both global features and localized disturbances.

1.3 Organization of this Thesis

The remainder of this thesis is organized as follows. In chapter 2, we will briefly introduce the discrete wavelet transform (DWT), the categories of wavelets and their own properties, lossless and lossy compression schemes, and some image quality evaluations.

In chapter 3, image compression method that we use will be presented. And some parameters in our experiments will be mentioned. Also, the test images are shown.

In chapter 4, by lots of experiments, comparisons will be done. And the selection of the proper wavelet to different images will be concluded.

In chapter 5, the conclusions and future works will be stated.