# Image Compression by Self-Organized Kohonen Map


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**ABSTRACT**

Image compression is an essential task for image storage and transmission applications. Vector quantization is often used when high compression rates are needed. Self-Organizing Map(SOM) algorithm can be used to generate codebooks for vector quantization. This thesis presents a compression scheme for digital still images using the SOM algorithm. The processes will not only have the advantages of vector quantization, but also preserve its topological property that generate ordered codebook with substantial dimension reduction which makes image compression more effective. The method of Discrete Cosine Transform（DCT） is chosen to be the preprocessing scheme in order to identify the image frequency information . And we also used the sub-band scheme to separate the DC and AC coefficients, so as to reduce the neural network learning complexity. Our results show that in this compression scheme, we can earn 33?36dB coding gain in PSNR（peak signal-noise-ratio）with DCT and sub-band preprocess. Otherwise, the size of codebook is the deterministic factor of compression ratio, and we can only use 6?8 bits to implement the other VQ-based scheme using 7?9 bits.



Keywords : Discrete Cosine Transform ; Vector Quantization ; Self-Organizing Feature Maps ; Codebook


**Table of Contents**



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