

The Study and Implementation of High Effect Progressive Image Transmission

王秋洋、陳文儉

E-mail: 9806833@mail.dyu.edu.tw

ABSTRACT

In this thesis, a prototype for progressive transmission of color images, is presented. The original image is separated into multiple-resolution images by pyramid structure. Then the information of each layer is coded by lossless compression coding. This prototype consists of the sever part and the client part. The server part provides wavelet transform, color transform, storage, compressed wavelet coefficients and progressive transmission. In the client part, with the inverse wavelet transform, the inverse color transform, the received wavelet coefficients are used to build successive improved reconstructions of the image. The prototype of this research will be put into practice in the applications of commercial.

Keywords : Progressive Image Transmission、Wavelet Transform、Color Transform

Table of Contents

第一章 緒論

1.1 前言

1.2 研究動機與目的

1.3 論文架構

第二章 相關研究

2.1 YIQ色彩轉換演算法

2.2 小波轉換演算法

2.3 EZW演算法

第三章 高效能影像漸進傳輸系統架構

3.1 系統架構

3.2 檔案格式

第四章 實驗結果

4.1 本文實作結果

第五章 結論

REFERENCES

- [1] L. Wang and M. Goldberg, " Lossless progressive image transmission by residual error vector quantization, " IEEE Processings, Vol. 135, Pt. F, No. 5, October 1988.
- [2] L. Wang and M. Goldberg, " Progressive Image Transmission Using Vector Quantization on Images in Pyramid Form, " IEEE Transactions on communications, Vol. 37, No. 12, December 1989.
- [3] A. Kh. Al-Asmari and A. S. Ahmed, " A LOW BIT RATE HYBRID CODING SCHEME FOR PROGRESSIVE IMAGE TRANSMISSION, " IEEE Transactions on Consumer Electronics, Vol. 44, No. 1, February 1998.
- [4] S. P. Voukelatos and J. J. Soraghan, " A multiresolution adaptive VQ based still image codec with application to progressive image transmission, " Signal Processing: Image Communication, Vol. 13, pp. 135-143, 1998.
- [5] M. Goldberg and L. Wang, " Comparative Performance of Pyramid Data Structures for Progressive Image Transmission, " IEEE Transactions on Communications, Vol. 39, No. 4, April 1991.
- [6] G. Mongatti, L. Alparone, G. Benelli, S. Baronti, F. Lotti, and A. Casini, " Progressive image transmission by content driven Laplacian pyramid encoding, " IEEE Processings, Vol. 139, No. 5, October 1992.
- [7] J. H. Kim, W. J. Song, " Pyramid-structured progressive image transmission using quantisation error delivery in transform domains, " IEE Proc-Vis Image Signal Process, Vol. 143, No. 2, April 1996.
- [8] B. Zeng, M. S. Fu, and C. C. Chuang, " New interleaved hierarchical interpolation with median-based interpolators for progressive image transmission, " Signal Processing, Vol. 81, pp. 431-438, 2001.
- [9] K. Li. Chung and S. Y. Tseng, " New progressive transmission based on quadtree and shading approach with resolution control, " Pattern

Recognition Letters, Vol. 22, pp. 1545-1555, 2001.

[10] Y. C. Hu and J. H. Jiang, " Low-complexity progressive image transmission scheme based on quadtree segmentation, " Real-Time Imaging, Vol. 11, pp. 59 – 70, 2005.

[11] Y. S. and D. Pycoc, " Iconic representation for progressive transmission of medical images, " International Congress Series, Vol. 1256, pp. 292 – 298, 2003.

[12] X. Qi and J. M. Tyler, " A progressive transmission capable diagnostically lossless compression scheme for 3D medical image sets, " Information Sciences, Vol. 175, pp. 217 – 243, 2005.

[13] Y. L., J. Zheng, Y. Jiang, and M. Yang, Bingmei Fu, and W. Hou, " Progressive Image Transmission for Medical Applications based on Wavelet Transform with a Non-uniform Scalar Quantization Scheme, " Proceedings of the 28th IEEE EMBS Annual International Conference New York City, USA, Aug 30-Sept 3, 2006.

[14] J. V. Oller, R.J. Villanuevaa, and S. D??ez, " CASANDRA: A prototype implementation of a system of network progressive transmission of medical digital images, " Computer Methods and Programs in Biomedicine, Vol. 85, Issue: 2, February, pp. 152-164, 2007.

[15] J. M. Zheng, D. W. Zhou, and J. L. Geng, " ROI Progressive Image Transmission Based on Wavelet Transform and Human Visual Specialties, " Proceedings of the 2007 International Conference on Wavelet Analysis and Pattern Recognition, Beijing, China, pp. 260-264, Nov 2-4 2007.

[16] C. C. Chang, Y. C. Li, and C. H. Lin, " A novel method for progressive image transmission using blocked wavelets, " International Journal of Electronics and Communications, Vol. 62, pp. 159-162, 2008.

[17] T. M. Shapiro, " Embedded image coding using zerotrees of wavelet coefficients, " IEEE Trans. On Signal processing, Vol. 41, No. 12, pp. 3445-3462, 1993.