## 高效能影像漸進傳輸之研究與實作

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### 摘要

本論文提出一個彩色影像漸進傳輸(Progressive Image Transmission)原型,利用影像金字塔(Image Pyramid)結構將原影像分割成多重解析度,接著將每一層影像資訊利用無失真壓縮加以編碼。此原型包含兩個部分伺服端與客戶端;在伺服端,提供小波編碼、色彩轉換、小波係數壓縮儲存與漸進傳輸功能。在客戶端,包含小波解碼、色彩轉換、接收與已傳送的小波係數合成,最後將已傳送影像合成,逐漸改善重建影像的品質。本論文所開發的原型,將投入商業應用中。

關鍵詞:影像漸進傳輸、小波轉換、色彩轉換

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#### 參考文獻

- [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. AI-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. Pycock, "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, 1933.