

{tag}

{/tag}

IJCA Proceedings on International Conference
on Information and Communication Technologies

© 2014 by IJCA Journal

ICICT - Number 5

Year of Publication: 2014

Authors:

Akhila S

Shivanand N T

{bibtex}icict1451.bib{/bibtex}

Abstract

A robust and an efficient source and channel coding algorithms is proposed in this paper for the purpose of progressive transmission of images over wireless communication systems. This paper presents a modified orthogonal frequency division multiplexing system for robust progressive image transmission. A joint source channel coder is employed in the modified OFDM system. The set Partitioning hierarchical trees (SPIHT) used as source code and low density parity check code used as channel coder. The input image is applied with discrete wavelet transforms, by using an wavelet type of biorthogonal wavelet family, in turn then the SPIHT algorithm is applied for the further process, while decoding an IDWT is applied for the

reconstruction of the image. The modified OFDM system includes an adaptive clipping technique as a peak to average power ratio reduction technique for the OFDM signal. This proposed PAPR reduction technique is based on adaptive clipping for the amplitude of the input signal, where each of the signals related to the different four groups of the modified SPIHT coder is clipped with a different clipping level according to the group sensitivity, also this work is carried on a 1024*1024 image. Finally this paper demonstrates the efficiency of the modified OFDM system with proposed PAPR reduction technique, when compared with a normal OFDM system without the adaptive clipping technique, and also a CCDF (complementary Cumulative Distributive function) comparison of PAPR is done for the modified OFDM system with and without adaptive clipping over AWGN with QPSK and QAM16 modulation technique. The simulation results are presented based on bit error rate (BER), the peak signal to noise ratio (PSNR) and PAPR over AWGN channel. Based on the simulation results, the proposed structure provides a significant improvement in BER and PSNR performances and a reduction in PAPR is achieved.

References

ences

- A. Said and W. A. Pearlman, "A New Fast and Efficient ImageCodec Based on Set Partitioning in Hierarchical Trees," IEEE Trans. Circuit Syst. Video Technol. , vol. 6, pp. 243-250, June 1996.
- Junqing Liu, DanguiXie, Shuifa Sun, "Progressive imagetransmission based on joint source channel distortion model", International Conference on Computer Application and System Modeling (ICCA SM 2010)
- S. Lin, and D. J. Costello, Error Control Coding: Fundamental and Application, Published by: Pearson Prentice Hall, 1983.
- R. G. Gallager, "Low-Density Parity-Check Codes," MIT Press, Cambridge, 1963.
- Y. Wu and W. Y. Zou, "Orthogonal frequency division multiplexing: A multi-carrier modulation scheme," IEEE Trans. Consumer Electronics, vol. 41, no. 3, pp. 392–399, Aug. 1995.
- W. Y. Zou and Y. Wu, "COFDM: An overview," IEEE Trans. Broadcasting, vol. 41, no. 1, pp. 1–8, Mar. 1995.
- T. Jiang, W. Xiang, H. H. Chen, and Q. Ni, "Multicast broadcasting services support in OFDMA-based WiMAX systems," IEEE Communications Magazine, vol. 45, no. 8, pp. 78–86, Aug. 2007.
- T. Jiang and Y. Wu, "An Overview: Peak-to-Average Power Ratio Reduction Techniques for OFDM Signals," IEEE Transactions on Broadcasting, Vol. 54, No. 2, pp. 257-268, Jun. 2008.
- F. S. Al-Kamali, M. I. Dessouky, B. M. Sallam, F. Shawki and F. E. Abd El-Samie, "Transceiver Scheme For Single-Carrier Frequency Division Multiple Access Implementing the Wavelet Transform and Peak To-Average-Power Ratio Reduction Methods," IET Communications, Vol. 4, No. 1, pp. 69-79, 2010.
- J. Kim and Y. Shin, "An Effective Clipped Companding Scheme for PAPR Reduction of OFDM Signals," Proceedings of the IEEE ICC'08, pp. 668-672, 2008.

- T. Jiang, W. Yao, P. Guo, Y. Song and D. Qu, "Two Novel Nonlinear Companding Schemes With Iterative Receiver to Reduce PAPR in Multi-Carrier Modulation Systems", IEEE Transactions on Broadcasting, Vol. 51, No. 2, pp. 268 - 273, Jun. 2006
- F. S. Al-Kamali, M. I. Dessouky, B. M. Sallam, F. Shawki and F. E. Abd El-Samie, "Performance Enhancement of SC-FDMA Systems Using a Companding Technique", Ann. Telecommun. ,Vol. 65, No. 5-6, pp. 293-300, 2010.
- L. Guan, T. Jiang, D. Qu and Y. Zhou, "Joint Channel Estimation and PTS to Reduce Peak-to-Average Power Ratio in OFDM Systems without Side Information", IEEE Signal Processing Letters, Vol. 17, No. 10, pp. 883-886, October 2010.
- E. S. Hassan, S. E. El-Khamy, M. I. Dessouky, S. A. El-Dolil and F. E. Abd El-Samie, "A Simple Selective Mapping Algorithm For The Peak To Average Power Ratio In Space Time Block Coded MIMO-OFDM Systems", Proceedings of the International Conference on High Performance Computing, Networking and Communication Systems (HPCNCS-08), 2008.
- T. Jiang and G. Zhu , "Complement Block Coding for reduction in Peak-to-Average Power Ratio of OFDM Signals," IEEE Communications Magazine, vol. 43, no. 9, pp. S17 - S22, Sept. 2005.
- Yi Sun, Ran-ming Li, Xiao-lei Cao "Image Compression Method of Terrain Based on Antonini Wavelet Transform" IEEE Trans. Signal Processing, vol. 41, pp. 3445-3462, 2005

Index Terms

Computer Science

Signal Processing

Keywords

Ofdm Papr Spiht Wavelet Biorthogonal Ccdf Ldpc Unequal Error Protection (uep) Awgn Channel.

