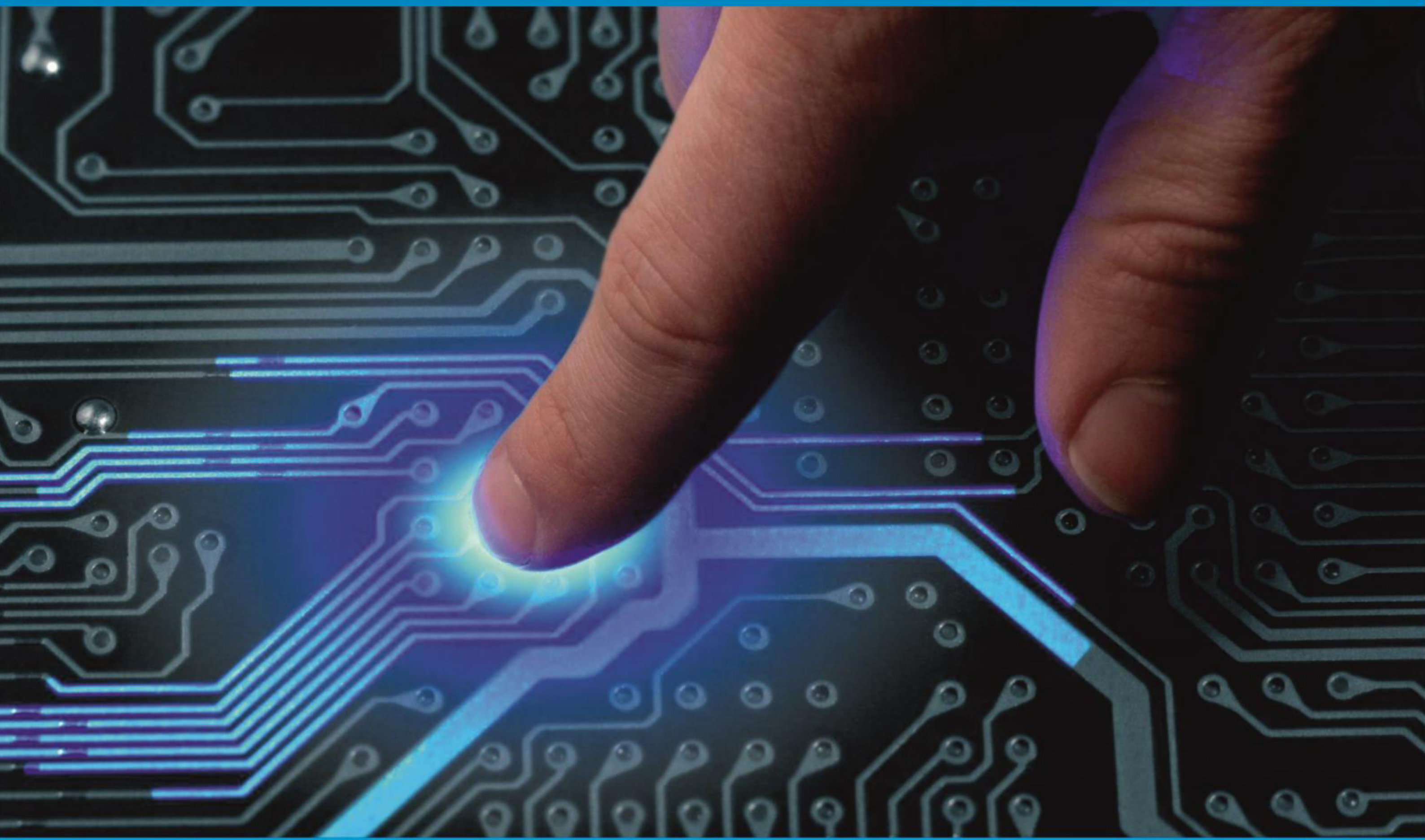
IJIRCCE

e-ISSN: 2320-9801 | p-ISSN: 2320-9798



INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH

IN COMPUTER & COMMUNICATION ENGINEERING

Volume 9, Issue 3, March 2021

INTERNATIONAL STANDARD SERIAL NUMBER INDIA

Impact Factor: 7.488

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International Journal of Innovative Research in Computer and Communication Engineering

| e-ISSN: 2320-9801, p-ISSN: 2320-9798| www.ijircce.com | |Impact Factor: 7.488 |

|| Volume 9, Issue 3, March 2021 ||

| DOI: 10.15680/IJIRCCE.2021. 0903064 |

Encrypted Image Transmission over OFDM System Using XOR Algorithm

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ABSTRACT: In the Communication Channel many applications are implemented on Data (Text, Image, Audio and Video) Transmission on Packetization Process. In FDMA they are implemented on Audio and Video Transmission Processes. In an OFDM system, due to channel fading, only a subset of carriers is usable for successful data (Image) transmission. Once the channel information state is available at the Transmitter, We can achieve proactive decision of mapping the description onto the subcarriers. That also discards the remaining descriptions at the transmitter, which would have been otherwise dropped at the receiver due to unacceptably high channel errors. In Our Project; we provide an power saving method through which we tend to transmit the discrete wavelet transformation that is relied upon compressed image frames over OFDM channels. Depending upon the one bit channel state information at the TX side, we assign the descending priority descriptions to the current good channels. To minimize the power consumption of the system, we map descriptions onto poor sub channels and they are dropped at the TX. Here we have implemented Image transmission on OFDM channel by packetization on transmitting the date with efficient power using. Also we implement a Different Modulation and Different Channel SNR ratio on Energy Saving calculated for a maximum level of 16 PSK Modulation on 38 % Energy Saved with 51% PSNR Quality measurement on MATLAB Simulation Results.

KEYWORDS: Image compression, discrete wavelet transform signal to noise ratio, data transmission, QAM modulation.

I. INTRODUCTION

For any good wireless system, achieving best data rates will be the main goal. Still this data rate achievement is controlled and limited by ISI i.e., Inter Symbol Interference. Also the frequency selective fading will affect the factor on achieving the high data rate. Rayleigh fading channel is an example of frequency selective and time varying channel. Multi-carrier modulation is used for such channels to mitigate the effect of ISI. OFDM is a multi-carrier modulation scheme having excellent performance which allows overlapping in frequency domain.

Discrete Wavelet Transform is a technique to transform image pixels into wavelets, which are then used for wavelet-based compression and coding. The discrete wavelet transform (DWT) is an ideal tool for analyzing signals with frequency spectrum variable in time. Some research works have applied with success the DWT to the stator startup current in order to diagnose the presence of broken rotor bars in induction machines.

In OFDM, individual sub channels are affected by flat fading, so for a period of time, condition of the sub channels may be good, or they might be deeply faded. The packets which are transmitted through these faded sub channels are highly prone to be lost at the receiver due to non-acceptable errors image transmission, the most common way is progressive (or layered) encoding technique. State-of-the-art image or video compression techniques, such as JPEG2000 (which uses Discrete Wavelet Transform DWT), layered coding is performed.

II. RELATED WORD

In [1], the discrete cosine transforms (DCT) is a technique for converting a signal into elementary frequency components. It is widely used in image compression. Here we develop some simple functions to compute the DCT and to compress images. These functions illustrate the power of Mathematical in the prototyping of image processing. The DCT of a list of length n = 8 and the 2D DCT of an 8 x 8 array. We have restricted our attention to this case partly for simplicity of exposition, and partly because when it is used for image compression, the DCT is typically restricted to this size. Rather than taking the transformation of the image as a whole, the DCT is applied separately to 8 x 8 blocks of the image. We call this a *blocked* DCT.

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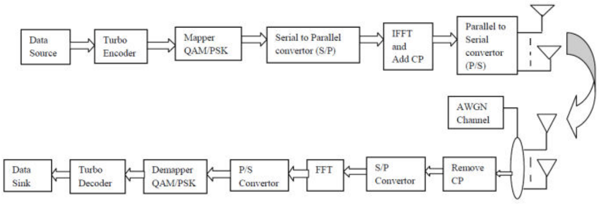
III. BLOCK EXPLANATION



IV. PROPOSED ALGORTHIM

a. *Design Considerations:*

- To realize polarization demultiplexing
- polarization-dependent loss compensation
- laser phase noise compensation
- residual synchronization error
- clock frequency offset

b. *Description of the Proposed Algorithm:*

Aim of the proposed algorithm method to compensate the phase shift over subcarriers by using image processing for both DDO-OFDM and CO-OFDM system

***Step 1*: ** Set partitioning sorting algorithm.

One of the main features of the proposed coding method is that the ordering data is not explicitly transmitted. Instead, it is based on the fact that the execution path of any algorithm is defined by the results of the comparisons on its branching points. So, if the encoder and decoder have the same sorting algorithm, then the decoder can duplicate the encoder's execution path if it receives the results of the magnitude comparisons, and the ordering information can be recovered from the execution path.

One important fact used in the design of the sorting algorithm is that we do not need to sort all coefficients. Actually, we need an algorithm that simply selects the coefficients such that $2^n \le |c_{i,j}| < 2^{n+1}$, with n decremented in each pass. Given n, if $|c_{i,j}| \ge 2^{n+1}$ then we say that a coefficient is significant; otherwise it is called insignificant. The sorting algorithm divides the set of pixels into partitioning subsets T_m and performs the magnitude test,

$$- \max_{(i,j)\in T_m} \{|c_{i,j}|\} \ge 2^n \qquad \text{------ (3.18)}$$

If the decoder receives a "no'' to that answer (the subset is insignificant), then it knows that all coefficients encoder and the decode T_m, are insignificant. If the answer is "yes" (the subset is significant), then significance test is then applied to the new subsets. This set division process continues until the magnitude test is done to all single coordinate significant subsets in order to identify each significant coefficient rule shared by the er is used to partition T_m, into new subsets $T_{m,l}$ and the entire. To reduce the number of magnitude comparisons (message bits) we define a set partitioning rule that uses an expected ordering in the hierarchy defined by the sub band pyramid. The objective is to create new partitions such that subsets expected to be insignificant contain a large number of elements, and subsets expected to be significant contain only one element.

$$S_n(T) = \max_{(i,j)\in T_m} \{|c_{i,j}|\} \ge 2^n \qquad \text{--- (3.19)}$$

- To make clear the rela1tionship between magnitude comparisons and message bits, we use the function 0; otherwise.

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- To indicate the significance of a set of coordinates. To simplify the notation of single pixel sets, we write $S_n(\{(i,j)\})$ as $S_n(i,j)$.

Step 2: spatial orientation

A tree structure, called spatial orientation tree, naturally defines the spatial relationship on the hierarchical pyramid. Fig.3.6 shows how our spatial orientation tree is defined in a pyramid constructed with recursive four-sub-band splitting. Each node of the tree corresponds to a pixel and is identified by the pixel coordinate. Its direct descendants (offspring) correspond to the pixels of the same spatial orientation in the next finer level of the pyramid. The tree is defined in such a way that each node has either no offspring (the leaves) or four offspring, which always form a group of 2 x 2adjacent pixels. In Fig 3.6, the arrows are oriented from the parent node to its four offspring. The pixels in the highest level of the pyramid are the tree roots and are also grouped in 2 x 2adjacent pixels. However, their offspring branching rule is different, and in each group, one of them (indicated by the star in Fig.3.6) has no descendants.

The following sets of coordinates are used to present the new coding method:
O (i,j): set of coordinates of all offspring of node (i, j);
D (i, j) : set of coordinates of all descendants of the node
H: set of coordinates of all spatial orientation tree roots (nodes in the highest pyramid level);
L(i, j) = D(i, j) - O(i, j) .

Step 3: subcarrier modulated over standard single-mode optical fiber performance of the MBB is comfortable with that of the conventional method. Simulation of 112-Gbit/s polarization-multiplexing CO-OFDM system.

V. SIMULATION RESULTS

To verify the efficiency of our method in coherent optical PDM-OFDM, we conduct a simulation of 112-Gbit/s coherent optical PDM-OFDM system, as shown in Fig. 6. At the transmitter, 112-Gbit/s PDM-CO-OFDM signals with 35.7-GHz optical bandwidth are generated using 2×2048-point IFFT with 1/8 length of FFT window for cyclic prefix, in which 1336 data subcarriers are modulated with 4 QAM. 16 pilot subcarriers are inserted to compensate the laser phase noise.

We gave the comparison of BPSK /QPSK / 16PSK modulation on different SNR on 15 and 40 db with MSE and PSNR on MATLAB simulation.

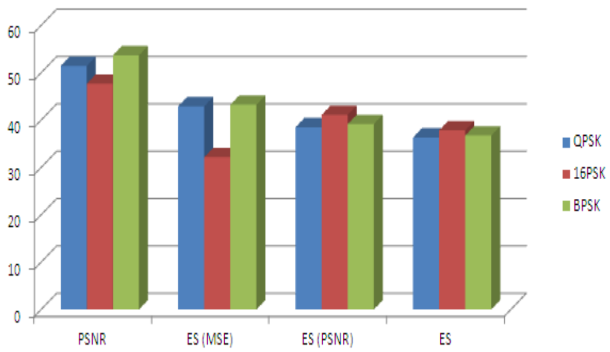

Fig.: SNR at 15dB comparison on various modulation

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SNR:15db			
	QPSK	16PSK	BPSK
MSE	1.44E+05	3.04E+05	9.19E+04
PSNR	51.4478	47.7084	53.6834
ES (MSE)	42.9101	32.1522	43.2434
ES (PSNR)	38.4902	41.0989	39.165
ES	36.3155	37.818	36.7373

Fig.: SNR at 15dB affected image received

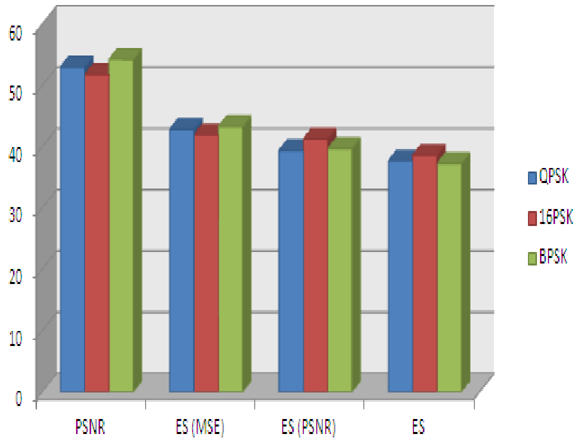

Fig. SNR at 40dB comparison on various modular

VI. CONCLUSION AND FUTURE WORK

To Conclude our Project Case of DWT Subband Analysis on 32(8+8+8+8) Packetization on Image Transmission. Over OFDM channels where binary channel state information is available at the transmitter, but retransmission is not allowed. We propose an energy saving approach, where the compressed coefficients are arranged in descending order of priority and mapped over the channels starting with the good ones In this Project We Implemented Results on Energy saving for 16 PSK is Compared to QPSK technique of Previous is better. The coefficients with lower importance level, which are likely mapped over the bad channels, are discarded at the transmitter to save power without significant loss of reception quality. In Our Project we gave a comparison for BPSK/QPSK/16PSK Modulation on different SNR ratio on 15 and 40db with MSE and PSNR Comparison on MATLAB Simulation results.

REFERENCES

[1] Y. Li and G. L. Stueber, Orthogonal frequency division multiplexing for Wireless Communications, *Springer, 2005.*

[2] S.Weinstein and P. Ebert, Data transmission by frequency-division multiplexing using the discrete Fourier transform , *IEEE Transactions on Communication Technology, vol. 19, no. 5*, pp. 628–634, October 1971

[3] M. K. Lakshmanan and H. Nikookar, “A review of wavelets for digital wireless communication,” *Journal on Wireless Personal Communication, vol. 37, no.3-4, pp. 387-420*, Springer, May 2006.

[4] C. Christopoulos, A. Skodras, and T. Ebrahimi, “The JPEG2000 still image coding system: An overview,” *IEEE Trans. Consumer Electron, vol. 46, no. 4*, pp. *1103–127*, Nov. 2000.

[5] Kiani, A.; Baghersalimi, G.; Zanj, B., "Performance assessment of DFTOFDM and DWT-OFDM systems in the presence of the HP nonlinearity," *Telecommunications (ConTEL), Proceedings of the 2011 11th International Conference on, vol., no., pp.273, 278,* 15-17 June 2011.

[6] Al-Hinai, N.; Neville, K.; Sadik, A.Z.; Hussain, Z.M., "Compressed image transmission over FFT-OFDM: A comparative study," *Telecommunication Networks and Applications Conference, 2007. ATNAC 2007. Australasian, vol., no., pp.465, 469*, 2-5 Dec. 2007,doi:10.1109/ATNAC.2007.4665272.

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