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BOOKS AND CHAPTERS IN EDITED VOLUMES/BOOKS, CONFERENCE PUBLISHED BY TEACHER DURING A.Y. 2017-18

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Slotted Circular Shaped Wide Band Antenna for Wi-Max Application

Devi Perla, Rajya Lakshmi Valluri

Abstract: In this paper, Circular shaped Micro strip patch antenna is designed for wide band and to improve the performance of an antenna and applicable for Wi-MAX, a slot is placed on a circularly shaped microstrip patch antenna .FR4 substrate with a relative permittivity of 4.4 and strip line feed is used. When compared to conventional patch antenna, the slotted antenna has better return loss of -35dB and a gain of 5dB. HFSS (High Frequency Structure simulator is used for designing and simulation of results.

Index Terms: Microstrip Patch antenna, Wi-MAX, HFSS, Wide Band.

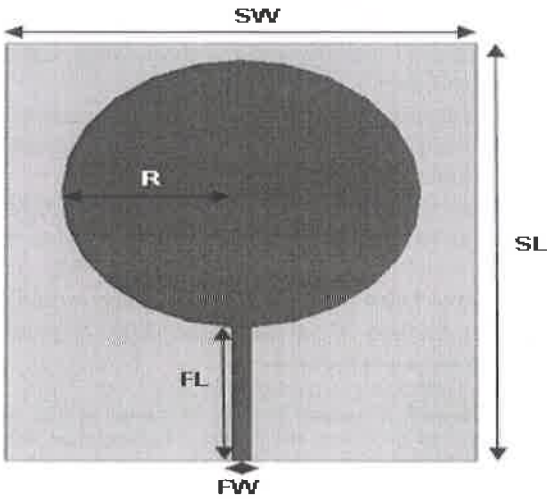
I. INTRODUCTION

Due to high increase in demands for wireless communication systems, instead of using several antennas for various applications, a single Wideband antennas is used. This antenna will give better return loss for wide band of frequencies. The advantages of using these wideband antennas are large bandwidth, high gain, low cost, cost, high data rates and high complexity and it is used in different applications such as radar, imaging in medicine and military communication. Wide band antenna can be designed in several ways, by using different patch shapes like triangular patch, hexagonal patch, circular and rectangular etc. Several methods are used to enhance its bandwidth (BW) by using parasitic structures, defected ground plane and other different arrangements. A loop antenna with unequal sides of octagonal shape closed with the loop capacitance. Both the ends of the loop antenna are connected to the capacitance. By changing the capacitance of the loop, the frequency operation of the loop is changed [1]. A rhombus shaped antenna is used coplanar wave guide feed. This antenna used natural rubber as a substrate to achieve wide band [2].A square patch antenna achieved ultra wide band by placing the slots on the patch and the feed line [3]. A multilayer configuration antenna consists of three rectangular patches. One patch is on the bottom layer and other two patches are on top layer. The bottom patch is only fed and other two patches are coupled electromagnetically [4]. A circular ring antenna used defected ground structure and it was fed strip line feed to achieve wide band [5]. A planar antenna consists of bevelled rectangular patch and it is used partial ground to get multi resonance modes [6].A rectangular antenna comprises stepped slot achieved wide band characteristics by changing the feed position and dimensions of the slot and feed [7]. In view of above observations a circular patch antenna is designed for wide band operation. In order to applicable for Wi-MAX application, the patch is slotted. This slotted patch has given better return loss and gain when compared to the circular shaped antenna.

II. ANTENNA DESIGN

The antenna consist of circular patch, it was placed on FR4 substrate 50mmx42mmx1.6mm with a substrate thickness of 1.6mm, loss tangent 0.02 and dielectric constant 4.4. To this circular patch antenna strip line feed is given .The Fig.1 shows the circular patch antenna and it side view. High Frequency Structure Simulator (HFSS) software is used to design and analyse the antenna. The dimensions of the design are tabulated in table 1.

(a)Side View



(b) Top View

Fig.1. Circular Patch Antenna

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DC Characteristics of AlN Spacer Based $Al_xGa_{(1-x)}N$/GaN HEMT for High Power Applications

Murugapandiyan P, Rajya Lakshmi V, Ramkumar N, Vijay kumar Raju V

ABSTRACT--- *We report the DC characteristics of 0.3μm gate length, 4X75 μm width , AlN spacer layer based $Al_xGa_{(1-x)}N$/GaN HEMT devices for two different Al mole fraction x=0.30 and x=0.27 in the barrier layer. The proposed device exhibits a maximum drain current I_{DS} of 1210 mA/mm, highest sheet carrier density (n_s) of $1.39x10^{13}$ cm^{-2} , mobility (μ) of 1643 cm^2 / V-s and transconductance (g_m) of 288 mS/mm for x=0.30 . The proposed HEMT structure is simulated using Synopsys TCAD tool and results are verified with experimental data. This excellent DC characteristics obtained from this HEMT device have helped us propose that III-N compound semiconductors with higher 2DEG sheet carrier density are ideal for future high power applications.*

KEYWORDS *2DEG, Sheet charge density, HEMT, transconductance, polarization, DC characteristics.*

1. INTRODUCTION

GaN based HEMTs have been attractive semiconductor devices for high power and high frequency applications for the past two decades. GaN based compound semiconductor devices are prominent nano electron devices for high speed and high power application in the area of power electronic devices, High power amplifiers and opto electronic devices because of their higher band gap of 3.4 eV, higher saturation velocity $2.5x10^7$cm/s, peak electric field of 150 kV/cm and higher electron mobility of 1000 cm^2/V-s [1-3].

Existence of alloy disorder scattering in conventional AlGaN/GaN limits the mobility of electron in 2DEG .The higher band gap AlN spacer layer between the AlGaN/GaN reduces the wave penetration in 2DEG which tends to enhance the electron mobility and the sheet charge carrier density also improves [1].

Existence of spontaneous and piezoelectric polarization at AlGaN/GaN interface, the device achieves high electron density in the 2DEG region.

In this research article, we propose a new HEMT structure by introducing a 1nm AlN space layer between the barrier and channel layer. The wide bandgap of AlN (6.1 eV) spacer layer induces high electron density in 2DEG region and we are used 50 nm Si_3N_4 passivation to protect the device from surrounding. A very thin 1nm GaN cap layer was used, which reduced the leakage current and also it prevented the devices from oxidation. Moreover, a 115 nm AlN layer was added between the GaN buffer and SiC substrate to reduce the strain induced because of lattice mismatch between them. The proposed device structure takes care of leakage current minimization with enhanced thermal conductivity. Therefore the proposed AlN spacer based HEMT device shows excellent DC characteristic with Drain current of I_{ds}=1210 mS/mm, transconductance of (gm) 288mS/mm with breakdown voltage of 14V for Al mole fraction of 0.30 in the barrier layer.

The proposed AlN based spacer layer $Al_xGa_{(1-x)}N$/GaN HEMT device structure is simulated for two different Al mole fraction (x=0.30, 0.27). A peak drain current density of 1210 mA/mm and 288 mS/mm of transconductance achieved for Al mole fraction x=0.30. The device with Al mole fraction of x=0.27 exhibits 710 mA/mm of peak drain current density and 217 mS/mm of transconductance.

2. ALGAN/ALN/GAN HEMT DEVICE STRUCTURE

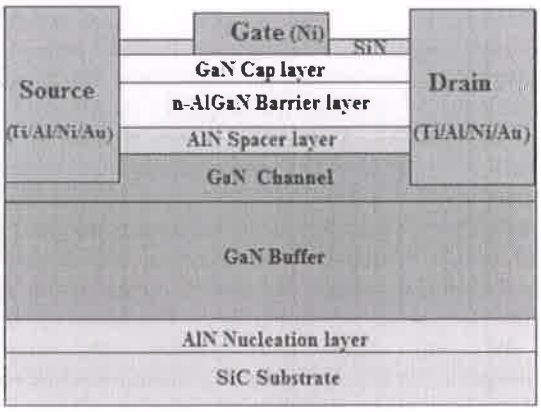

Figure.1. 0.3μm gate length, 4x75μm width of AlN spacer based HEMT

The schematic view of 300nm $Al_xGa_{(1-x)}N$/SiN/GaN shown in Fig.1. A very thin GaN cap layer is deposited over the barrier layer to reduce leakage current in the devices and also prevent the device surface from oxidation.

Table 1

Layer	*Specifications*
Si_3N_4 Passivation	50nm

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A Modified Trimmed Median Filter Technique for Noise Removal in an Image

Bhaskara Rao Jana, Beatrice Seventline.J

Abstract*—A modified trimmed filtration that is actually median when it comes to recovering the original images that are dishonored by the salt & pepper noise is actually presented here.The refined the pixels tend to be checked for high or least pixel values for example, 0 or 255 in this suggested method. Then this expedient pixel is recognized as the noisy one otherwise maybe not a noisy one in the event that processed pixel is actually 0 or 255. A two-dimensional 3*3 window can end up being selected with this specific noisy pixel as center component and being a running pixel. In this 3*3 window, then this algorithm can replace the value of the loud pixel as mean of these 9 elements in the 3*3 screen if all 9 aspects in the window are values like 0's or 255's. Then this modified trimmed median filtration technique can be applied if most of the 9 elements tend to be not 0's or 255's. This formula can eliminate the 0's and present that is 255's the 3*3 window and change the loud pixel value as average of mean and median of this remaining pixel in 3*3 screen. Simulation results imply that the proposed modified trimmed filter that is actually median can be works really in the event that picture can end up being influenced by salt and pepper sound.The outcome obtained from the recommended modified trimmed filter is compared with the AWMF, DBUTVF, and MDBUTMF. This proposed MTMF filtering technique is actually analyzed on various images for different quality testing parameters like PSNR, MSE.

Keywords* — high density noise, salt and pepper noise, Mean-Median filter, TMF.

I. INTRODUCTION

In the image processing, the more research happens to be accomplished on image noise removal in recent years. The digital images are generally degraded by many types of noises such as salt and pepper noise.

The images that can frequently degraded by the salt and pepper noise because of broadcast that is bad or ambiguity in the acquisition product or defective mind location channels in equipment. The pepper and salt sound requires high and reduced values associated with the pictures [8], [9]. The pre-processing procedure in image control is actually blocking that is noise. The filter systems that tend to be created should remove noise without removing the given info of a picture. Adaptive weighted filtration that is mean that good in reducing/ removing the salt-and-pepper noise but do never to eliminate high-density sound. A Noise adaptive fuzzy switching filtration this is certainly median can adaptively change the window size. Special filter systems like CBAFSMF [6] adaptive vector median filter [10] were suggested. Decision Based trimmed Algorithms [1], [2], [3] happened to be suggested by some researchers. A MDBMF was recommended [1], [2]. This algorithm changed with unsymmetrical average instead of conventional median. At greater noise densities [4], [5] the formula lead in fading. The MDBMF algorithm ended up being refined with MDBUTMF [1], [2]. The formula also exhibits fading[7] at larger sound densities. The MDBUTMPF algorithm replaced the pixel this is certainly degraded Unsymmetrical trimmed midpoint. The formula presented here dealt with in literatures operates for equal probability pepper-and-salt sound. The Paper addresses the overall performance of the proposed formula both for equivalent and noise this is certainly unequal. Section 2 deals with picture restoration filter systems. Section 3 provides the proposed algorithm part 4 gives knowledge associated with proposed algorithm part 5 shows the representation effects of proposed filtration with present filter systems. Section 6 provides in conclusion.

II. IMAGE RESTORATION FILTERS

The image restoration can be used to restore the images which tend to be degraded by noise using filtering that is different enhancement strategies. Digital picture repair is really a field of technology that scientific studies practices used to recuperate an world that is original degraded observations[5]. The picture destruction and renovation that is subsequent depicted like in Figure 1. In this thesis, nonetheless, only part this is certainly noise of destruction is actually worked with, which is found in Figure 2.

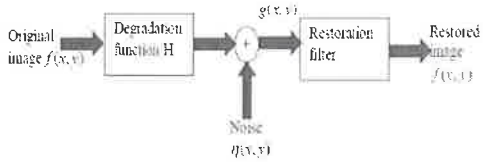

Fig. 1.Image degradation and restoration model

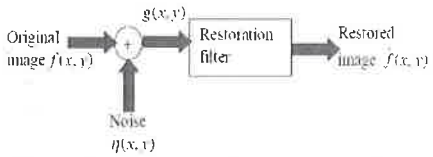

Fig. 2.Noise removal process model

III. THE PROPOSED MTMFALGORITHM

The proposed algorithm for the noise removal i.e., Modified Trimmed Median Filter (MTMF) is elucidated in

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Published in: 2018 15th International Conference on ElectroMagnetic Interference & Compatibility (INCEMIC)

Date of Conference: 13-16 November 2018 INSPEC Accession Number: 18637049

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Design and Analysis of Single Precision Floating Point Multiplication with Vedic Mathematics Using Different Techniques

K. V. Gowreesrinivas & P. Samundiswary

Conference paper | First Online: 26 January 2018

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Abstract

In this paper, multiplication for single precision floating point numbers is analyzed using Vedic multiplier with different techniques. In Vedic multiplier, the full adder is designed using modified 2 × 1 and 4 × 1 multiplexers, 3:2 and 4:2 compressors, and various prefix adders, such as Brent-Kung, Sklansky and Knoules adders for partial products addition. Furthermore, the performance metrics in terms of area and delay comparison is done

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Abstract:

Smart antennas are of tremendous importance in mostly radar applications and wireless communication. The dispute of the current wireless communication is to laydown dependable and wide service, which provide the required capacity for communication. Smart antenna systems make use of adaptive beam forming algorithms to direct the main beam toward the user direction and eliminate the interfering signals of the same frequency from other directions without altering the position of antenna. In this paper a comprehensive study of beamforming techniques using least mean square (LMS) algorithm, normalized least mean square (NLMS) algorithm and sign error least mean square (SLMS) algorithm are done. The preciseness by which the beam is formed towards the user and the interferers are observed. It was found that the accuracy depended on step size, which is utilised in these algorithms.

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Date of Conference: 04-05 January 2018

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In this paper, the Discrete Wavelet Transform is proposed to reduce PAPR and channel estimation. This paper focused on the Selected Mapping (SLM) and Partial Transmit Sequence (PTS) techniques using Wavelet transforms instead of conventional Fast Fourier Transforms. Using wavelets the filters for stationary and non-stationary signals can also be constructed. Wavelet based systems provide better spectral efficiency because of non-cyclic prefix requirement, with narrow side lobes and exhibit improved BER performance. In this work, performance of DFT, DCT, and DWT is considered in time domain. Simulation results show that the PAPR has been reduced in a great manner by wavelet SLM and PTS techniques. Simulations also reveal that DWT based transform outperforms the conventional DFT and DCT based channel estimator.

Published in: 2017 International Conference on Energy, Communication, Data Analytics and Soft Computing (ICECDS)

Date of Conference: 03-04 August 2017 **INSPEC Accession Number:** 17859134

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Published: 2011

An Iterative Algorithm of Channel Estimation for MIMO-OFDM Systems Based on Discrete Cosine Transform

2007 International workshop on Antenna Technology: Small and Smart Antennas Metamaterials and Applications

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I. Introduction

Smart antennas give excellent performance compared to existing antennas with respect to power consumption, user capacity as well as suppression of noise [1]. They are able to augment the useful received signal and reduce the interference signal using spatial filtering. Smart antennas have two main aspects. One is position calculation and the other one is beam forming. Basically array elements are utilised to obtain different versions of the same signal from a remote source which are placed at various positions. The signals are then manipulated to obtain the exact location of the source. Then the array directs the main lobe of the beam pattern towards the actual user. By this method, the maximum power will be radiated towards the actual user, which will result in a very good gain in that particular direction [5]. Smart antenna also can be utilised to achieve higher network capacity, mitigation of interference, frequency reuse, and to reduce the entire infrastructure costs [2]. Smart antenna being an adaptive array automatically adjusts to the surroundings. That is as the user signal and the interference signal changes the position, the beam pattern also changes the direction [3]. During the time of designing the array, the weights to be assigned to the channel is flexible and is finalised at the time of signal processing to meet the requirements. The antenna beam pattern has to be adjusted always as the null position should every time point in the moving interference direction as the interference will be moving slowly. An adaptive array antenna will always adjust the weights with an intention to attain the desired pattern [5].

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I. Introduction

THE conventional based OFDM system is mainly extracts IFFT and FFT at the transmitter and receiver but DWT-OFDM is an another method for this conventional FFT based OFDM system. Wornell et al. [1] shows the design of transmitter and receiver for wavelet modulation. This wavelet modulation also evaluates the performance of additive white Gaussian noise. Furthermore the bit rate error has been calculated in terms of signal to noise ratio which was presented in the channel. As Kucur et al. [2] proposed time-frequency scheme (wavelet packet modulation) which is used instead of the conventional OFDM Mohammed Aboud Kadhim et al [8] propound that by reducing PAPR in DWT based OFDM systems we can use the traditional sinusoid carriers of the FFT based OFDM instead of using suitable wavelets The simulation results showed that the Complementary Cumulative Distribution Function of PAPR for the DWT based OFDM signal achieved about 7dB improvement than the traditional OFDM signals at 10^{-3} of CCDF. Rohit Bodhe et al. [9] adopted DWT in place of FFT for frequency translation by using different modulation schemes i.e. 16-QAM, 32-QAM, 64-QAM and 128-QAM for both DWT and FFT based OFDM system model to achieve better performance in terms of Bit Error Rate for AWGN channel. It was found that all the wavelets perform better as compared to the IFFT-FFT localization of the pulse shaping that reduces both narrowband interference and multipath channel interference. Simulations proved that the wavelets are more robust against the narrowband interference as compared to the OFDM Modulation. Marius Oltean et al. [3] analyzed the bit error rate performance of DWT based multicarrier modulation. The BER performance of a Wavelet based OFDM transmission through a two-ray FSF channel has been investigated. Under these conditions, the good frequency localized wavelets provide the best results as compared to the wavelets localized in time which leads to the poor performance. Angrisani et al. [4] investigated the significant effect of presence of noise on the performance of the OFDM receiver in the wireless channel. The simulation results shows the suppression of noise thus supporting the claim. DWT based OFDM has the ability to combat the narrow band interference as the wavelets possess high spectral containment properties, making the system more robust beside inter-carrier interference compared to FFT realization. As cyclic prefix is not used in DWT OFDM, the data rates are better than that of FFT OFDM systems [5]. Dereje Haile Mariam et al. [6] explores by his research, he predicts that designing of wavelet filters are more suitable to OFDM

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MC-CDMA systems [7] schemes. Khaizuran Abdullah et al. [7] conclude that to select a suitable wavelet method i.e. the

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Abstract:

Space-frequency block coded OFDM signals is advantageous in high-mobility broadband wireless access, where the channel is highly time-as well as frequency-selective because of which the receiver experiences inter-carrier interference. One of the drawbacks of OFDM has been proved to be its high sensitivity to frequency offset which results in Inter carrier Interference. Second problem is to find exact timing of OFDM symbol at the receiver. This is called timing offset estimation. In this paper, an effort has been made to increase the overall performance of MIMO with OFDM system by combating the above mentioned problems of MIMO OFDM. Existing approaches for the frequency-offset estimation using the preamble data, Maximum Likely estimation of frequency and time offsets in OFDM systems using the two sets of identical cyclic prefix data of the received signals have been already proposed. In this paper an interference cancelling algorithm for cancelling time-selectivity induced ICI due to carrier frequencies in SFBC OFDM systems is proposed to improve the performance.

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I. Introduction

SFBC-OFDM signals usage is advantageous in high-mobility broadband wireless access, where the channel is largely frequency as well as time -selective because of which the receiver struggles both ISI and ICI. In continuation, ICI count because of time-selectivity of the channel which leads to consequences in loss of orthogonality among the subcarriers [1]. In the literature there are adequate procedures and algorithms to cancel ICI in MIMO OFDM systems. Stamoulis et al. [2], presented ICI-mitigating schemes with block linear filters for STBC OFDM. However, they are not scrutinizing the cost of QS inference in large delay spread channels. Sreedhar et al. [3], proposed interference mitigation procedures for MIMO system at the receiving node, and showed that the presented algorithm adequately cancels the ISI and ICI effects. They proposed an interference mitigation algorithm with AF protocol and phase compensation at the relays for a CO-SFBC-OFDM system. Chen et al. [4], used training-based technique to estimate the CFO. Once the CFO is estimated, it can be removed from the received signals. This is called CFO compensation. Chin-Liang Wang et al. [5] proposed Phase Rotated Conjugate Cancellation (PRCC) in which an optimal value of phase is multiplied with the OFDM symbol and its conjugate signal to be transmitted on different path. Another ICI self-cancellation scheme [6] based on generalized data allocation has been proposed in the literature to improve CIR performance of ICI self-cancellation system, where f.l is the optimal value, which depends on frequency offset. The SFBC-OFDM presented in the literature assumes excellent timing synchronization i.e. the frames transmitted by two transmitting antennas appear at the same time at the receiver. This is very onerous to achieve in a practical system and requires lot of time and feedback channel bandwidth. Because of this the frames transmitted by two antennas arrive at different time intervals which we regard to as the timing offset [7].ICI self-cancellation scheme proposed by Zhao [8] utilizes data allocation and combining of (1,−1) on two adjacent subcarriers i.e. same data is modulated at the subcarriers using (1,−1) as data allocation and are combined at thelreceiver with weights 1 and −1. It is on contrary to other techniques techniques to reduce ICI.

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Proceedings of 2nd International Conference on Micro-Electronics, Electromagnetics and Telecommunications pp 123–134

Patch Rotation-Based Frequency Reconfigurable Antenna for Wireless Applications

Perla Devi & Valluri Rajya Lakshmi

Conference paper | First Online: 07 September 2017

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Abstract

Frequency reconfigurable antenna is proposed in this chapter. The antenna structure consists of three patches namely rectangular patch, circular patch, and square patch. These patches are placed on Rogers RT duroid substrate. Frequency reconfigurability is achieved by using patch rotation technique. Rotating the patches by 120° in each rotational stage, the resonant frequency of the antenna is changed. This design is useful for

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Fast 3D Integrated Circuit Placement Methodology using Merg

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ABSTRACT

In the recent years the advancement in the field of microelectronics integrated circuit (IC) de proved to be a boon for design and development of various advanced systems in-terms of its reducti low power, high speed and with increased capacity to incorporate more designs. These systems prc advantage for armoured fighting vehicle (AFV) design to develop miniaturised low power, high systems. One such emerging high-end technology to be used to develop systems with high capa is discussed in this paper. Three dimensional IC design is one of the emerging field used to dev heterogeneous systems in a reduced form factor. A novel grouping based partitioning and merge (GPMP) methodology for 3D ICs to reduce through silicon vias (TSVs) count and placement time is state-of-the-art techniques, the proposed methodology does not suffer from initial overlap of cells placement which reduces the placement time. Connectivity based grouping and partitioning ensur TSVs and merge based placement further reduces intra layer wire-length. The proposed GPMP meth extensively against the IBMPLACE database and performance has been compared with the latest techi 12 per cent improvement in wire-length, 13 per cent reduction in TSV and 1.1x improvement in

Keywords: 3D Integrated circuits; Grouping; Merging; Through silicon vias; TSVs; Half perim HPWL

1. INTRODUCTION

The continuous exponential growth of the integrated circuit (IC), proportionally increasing the complexity of IC design process. The circuit density is rising enormously in this current era of system-on-chip (SoC) driving the designers to come up with an immediate solution to accommodate more number of cells in less area without raising the density and wire-length. The 3D technology[1] is emerged as a promising technique to boost performance[2] with reduced wire-length[3]. Integration of various technologies onto different layers is feasible using 3D integration with support for heterogeneous SoCs.

However, one of the key challenges for this technology is partitioning of the system into layers and connectivity management through silicon vias (TSVs) are the means to ca[illegible] among the layers for both signals and therm[illegible]ment of TSVs is one of the main by minimising the usage of TSV succeeded in 3D placement, stil on the layer and complex partitio increased design time and a large

A novel 3D placement meth partitioning and merging based cells are grouped according to maximum pins is considered as n group is formed with the cells cor partitioned into different layers d of groups and area occupied by t the reduced inter layer connec circuit density on a layer. TSVs based on the inter layer connec along with these TSVs are merge is considered for placement. Th

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Floating-point arithmetic plays major role in computer systems. The single precision floating point arithmetic operations are multiplication, division, addition and subtraction. Among all these multiplication is extensively used and involves composite arithmetic functions. The single precision (32-bit) floating point number split into three parts namely Sign part, and Exponent part and Mantissa part. The most significant bit of the number is a sign bit and it is a 1-bit length. Next 8-bits represent the exponent part of the number and next 23-bits represent the mantissa part of the number. Mantissa part needs large 24-bit multiplication. The performance of the single precision floating point number multiplication using Array, Wallace tree and Vedic multipliers is done in terms of performance comparison of multiplexer based single precision floating point multiplication using Array, Wallace tree and Vedic multipliers is done in terms of

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Abstract:

Floating point operations like multiplication, division, addition and subtraction are important in digital signal processing applications. Out of all these, frequently used operation is multiplication and it changes the performance of single precision floating point multiplication in terms of delay and area. In this paper, performance analysis of single precision floating point multiplier is done by using Karatsuba algorithm with Vedic technique for multiplication and different Parallel Prefix adders like Sklansky, Brent-Kung and Knowles adders for exponent addition. This combination provides lesser area to compute multiplication compared to that existing multipliers. Further, the performance parameters comparison is done in terms of area and delay. The entire modules of single precision floating point multiplier are developed with Verilog HDL and synthesized with Xilinx ISE tool.

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area and delay. These floating point multipliers modules are programmed and synthesized using Verilog in Xilinx ISE Simulator. Maximum propagated path delay and number of slices required on FPGA are compared for different multipliers. From the result it is concluded that Multiplexer based Vedic multiplier method has a great impact on improving the speed and reducing the area required on FPGA.

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I. Introduction
Multipliers plays major role in many high performance Digital Signal Processing applications. Multiplication based operations use much calculations to carry out arithmetic functions performed in large number of Digital Signal applications like convolution and FFT. Since multiplication dominates the execution time of most DSP algorithms, there is a necessity of speedy multiplier [1]. Digital signal processors can be differentiated into two types - fixed point and floating point. These designations refer to the format used to store and manipulate numeric representations of data.

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Contents

I. Introduction

Processing of Digital Signals are essential in real-time processing to perform numerical computations with high speed. Digital Signals can be Processing in two different categories such as floating point and fixed point. These designations are based on format used to store and manipulate numeric representations of data. Fixed point DSPs are used to represent both positive and negative numbers using minimum of a 16-bits that means 2^{16} possible ways. Whereas Floating point DSPs are used to represent rational numbers using 32-bits that means 2^{32} possible patterns.

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Adaptive Blind Equalization of QAM Transmitted Constellations across Linear Band-Limited Channel

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Abstract: *ISI (Intersymbol Interference) severely degrades the performance of high speed digital communication systems. A popular technique for countering ISI is Adaptive Equalization. Blind/Unsupervized equalization is one class of adaptive equalization where initial training of equalizer's weights is not feasible. Godard's Constant Modulus Algorithm (CMA) was the very first blind equalization algorithm that could be applied for two dimensional communication systems. It requires the transmitted signal's statistics to perform equalization. Picchi & Prati modified the standard decision-directed algorithm and proposed a new algorithm by the name Stop-and-Go. Wei Rao by simply converting the equalizer's output proposed a modified version of the CMA. This paper compares the performance of blind equalization algorithms, CMA, Stop-and-Go decision-directed algorithm and Wei Rao's modified constant modulus algorithm for 16 and 64-QAM constellations transmitted across a linear band-limited channel. Simulation results indicate impulse response of the cascade of transmission channel and equalizer (after convergence) is similar to that of ideal transmission channel's impulse response. The results also show that stop-and-go outperforms the rest in terms of convergence rate and MSE.*

Keywords: *Adaptive Equalization, Blind Equalization, CMA, ISI, Stop-and-Go*

I. Introduction

The presence of ISI (Intersymbol Interference) in digital communications is an undisputed fact. Non ideal band-limited channels distort the transmitted signal in both amplitude and phase; because of this pulses transmitted in succession at rates comparable to the bandwidth are smeared to the point that they are no longer distinguishable as well defined pulses at the receiving terminal [1]. Instead they overlap giving rise to ISI. ISI makes high speed communication unreliable by causing high error rates at the receiver. Equalization is defined as any signal processing technique that can counter ISI. In practice, the characteristics of transmission channels are unknown a priori and most of the channels are time-variant. Because of this, equalizers that are adaptive to the variations in the channels response are designed [1]. Adaptive Equalization can be classified into Supervized/Trained and Blind/Unsupervized. In supervized equalization a particular training sequence that is available both at the transmitter and receiver in proper synchronism is transmitted for the purpose of initial training of equalizer's weights [2]. On the contrary initial training of the weights cannot be done in Blind/Unsupervized as transmission of training sequence is not possible.

Sato was the first to propose an algorithm for performing blind equalization [3]. His algorithm was proposed in the context of binary pulse amplitude modulated signals. The significance of blind equalizers was well explained by Godard [4]. Godard proposed Constant Modulus Algorithm (CMA) and it is the first blind algorithm that could be applied for two dimensional communication systems. CMA requires the transmitted signal's statistics in order to perform equalization. Picchi and Prati's [5] Stop-and-Go Decision-Directed algorithm is basically a modified version of the standard decision-directed algorithm. The modification is made in the weight updation process with the help of a binary flag. This binary flag dictates whether the weight updation should be done or not. By simple adjustment of the equalizer output, Wei Rao [6] proposed a modified version of CMA. Unlike CMA, Wei Rao's modified CMA requires only the statistics of 4-QAM (Quadrature Amplitude Modulation) signal regardless of the transmitted signal. The basic aim of all the three algorithms is to make the impulse response of the cascade of the transmission channel and the equalizer (after convergence) to match the impulse response of the ideal transmission channel. Impulse response of an ideal transmission channel is given by:

$$h(k) = A\,\delta(k-n) \qquad (1)$$

where k denotes the time instant, n denotes the propagation delay and δ(k) is the Dirac delta function (Unit Impulse Function). In this paper performance of the three algorithms (CMA, Stop-and-Go and Wei Rao's modified CMA) is compared in terms of their convergence rate to investigate which blind algorithm has quicker learning capacity for 16 and 64-QAM transmitted constellations across a linear band-limited channel.

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Abstract:

Wearable antennas find their importance extensively in ever growing demand for WLAN applications. The deployment of textile material as a substrate in design of wearable antennas for WLAN applications is presented in this work. A crescent shaped antenna is designed by combining two circular shaped antennas with different radii in such a manner to achieve the desired resonant frequency compatible with the WLAN. The proposed crescent shaped antenna is designed and simulated using Ansoft HFSS platform for evaluation of return loss, VSWR, radiation pattern, and current distribution.

Published in: 2017 IEEE 7th International Advance Computing Conference (IACC)

Date of Conference: 05-07 January 2017

Date Added to IEEE *Xplore*: 13 July 2017

INSPEC Accession Number: 17030418

DOI: 10.1109/IACC.2017.0046

Publisher: IEEE

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Conference Location: Hyderabad, India

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Ansys Inc., Canonsburg, PA, USA

V. Rajyalakshmi
Department of Electrical Engineering, The Hong Kong Polytechnic University, Hong Kong

P. Mallikharjuna Rao

Contents

I. Introduction
Nowadays, extensive usage of body-worn electronic devices for various applications, leads to the focus on developing Wireless body area networks (WBAN). WBAN finds their usage in examining of patient's health condition from a remote area, tracking of a person in defence, continuous monitoring the condition of a sports person i.e., his endurance levels during his practice. Also WBAN facilitates to achieve the on-off body communications which can be linked up with the existing IP core networks [1]–[2].

Authors

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Abstract:

Compressor models are used to perform arithmetic operations like multiplication, addition etc. in digital signal processing applications such as Fast Fourier Transform, Convolution and Filtering. In order to achieve the high speed, the optimization takes place in all abstraction levels. In this paper, single precision floating point multiplication is developed using different compressor architectures to achieve high speed. Further, first, floating point multipliers are developed with normal 4:2 conventional compressors using XOR gates and further the same multipliers are developed using modified Compressors with XOR-XNOR gates and Multiplexers to achieve optimized delay and area. All the models are coded with Verilog HDL and implemented using Xilinx ISE.

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Published in: 2017 International Conference on Wireless Communications, Signal Processing and Networking (WiSPNET)

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Publisher: IEEE

Conference Location: Chennai, India

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Department of Electronics Engineering, Pondicherry University, Pondicherry, India

Contents

I. Introduction
As the technology advances in portable devices like mobile phones, video games and tablets for multimedia applications, it is necessary to focus on the speed and power consumption. These two factors are in trade-off so it is necessary to find the better trade-off between power and speed in order to design such devices. In order to achieve that, the optimization should be taking place in every stage.

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Proceedings of 2nd International Conference on Micro-Electronics, Electromagnetics and Telecommunications pp 613–620

New Training Pattern for DFT-Based Channel Estimation in OFDM System

Potnuru Narayanarao ✉, Jampana Siddartha Varma & Kasi Murali Krishna

Conference paper | First Online: 07 September 2017

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Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 434)

Abstract

Here, a training sequence pattern is proposed to estimate the 2-tap Rician channel for different Rician

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2018 | Supplement | Chapter

Patch Rotation-Based Frequency Reconfigurable Antenna for Wireless Applications

Authors : Perla Devi, Valluri Rajya Lakshmi

Published in: Proceedings of 2nd International Conference on Micro-Electronics, Electromagnetics and Telecommunications

Publisher: Springer Singapore

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Abstract

Frequency reconfigurable antenna is proposed in this chapter. The antenna structure consists of three patches namely rectangular patch, circular patch, and square patch. These patches are placed on Rogers RT duroid substrate. Frequency reconfigurability is achieved by using patch rotation technique. Rotating the patches by 120° in each rotational stage, the resonant frequency of the antenna is changed. This design is useful for Personal Communication System (PCS), Wi-Fi, and Wi-MAX applications.

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Improvement measures of DHT precoded OFDM over WiMAX channels with piecewise linear companding

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Abstract:

Orthogonal frequency division multiplexing (OFDM) is multicarrier wireless communication modulation scheme, which is a fascinating approach for wireless communication applications to achieve very high data rates. However, its key limitation is its large peak to average power ratio (PAPR), which results in significant distortion while passing through a nonlinear device, such as a transmitter high power amplifier (HPA). Many techniques are proposed to reduce PAPR, but those are reducing the PAPR at cost of increasing the bit error rate (BER). In this paper a combination of Piecewise linear companding with Discrete Hartley Transform (DHT) is proposed to reduce the PAPR to great extent. Simulation results shows that this proposed method obtains effective reduction of PAPR while maintaining improved performance in the Bit Error Rate (BER) without performance degradation of Power Spectral Density (PSD).

Published in: Tech IEEE Annual India Conference (INDICON)

Date of Conference: [illegible] **INSPEC Accession Number:** 2016 16650807

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I. Introduction to OFDM
OFDM is a robust and spectral efficient wireless communication technique which allows achieving very high data rates for the wireless communication applications. However, despite of its advantages, its key limitation is its large peak to average power ratio (PAPR), which leads to seviour performance degradation with nonlinear high power amplifier (HPA) at the transmitter.

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PROPERTIES OF RAZUMIKHIN CLASS OF FUNCTIONS AND PPF DEPENDENT FIXED POINTS OF WEAKLY CONTRACTIVE TYPE MAPS

G. V. R. Babu, G. Satyanarayana, and M. Vinod Kumar

Abstract. We discuss the properties of Razumikhin class of functions. We introduce weakly contractive type maps and prove the existence of PPF dependent fixed points of weakly contractive type mappings in the Razumikhin class of functions. Further, we prove the uniqueness of PPF dependent fixed points under certain assumption. We provide examples to illustrate our results.

1. Introduction

The Banach contraction principle is one of the fundemental and useful result in fixed point theory and it plays an important role in solving problems related to non-linear functional analysis. In 1997, Alber and Gurre-Delabriere [1] introduced weakly contractive maps which are extensions of contraction maps and obtained fixed point results in the setting of Hilbert spaces. Rhoades [12] extended this concept to metric spaces.

In 1997, Bernfeld, Lakshmikantham and Reddy [4] introduced the concept of fixed point for mappings that have different domains and ranges which is called PPF (Past, Present and Future) dependent fixed point. Furthermore, they introduced notation of Banach type contraction for a non-self mapping and proved the existence of PPF dependent fixed point theorems of Banach type contractive mappings in the Razumikhin class. In 2007, Dirci, McRae and Vasundhara Devi [7] developed a technique to establish the existence of PPF dependent fixed points for a non-linear operator in partially ordered metric spaces, and an application to a periodic boundary value problem with delay is given. In 2013, Hussain, Khaleghizadeh,

2010 *Mathematics Subject Classification.* 47H10, 54H25.
Key words and phrases. Fixed point, Contraction mapping, Weakly contractive mapping, PPF dependent fixed point, Razumikhin class.

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Comparative Analysis of Frequent Pattern Mining for Large Data Using FP-Tree and CP-Tree Methods

Authors : V. Annapoorna, M. Rama Krishna Murty, J. S. V. S. Hari Priyanka, Suresh Chittineni

Published in: Information and Decision Sciences

Publisher: Springer Singapore

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Abstract

Association rule mining plays a crucial role in many of the business organizations like retail, telecommunications, manufacturing, insurance, banking, etc., to identify association among different objects in the dataset. In the process of rule mining, identify frequent patterns, which can help to improve the business decisions. FP-growth and CP-tree are the well-known algorithms to find the frequent patterns. This work performs comparative analysis of FP-growth and CP (compact pattern)-tree based on time and space complexity parameters. The comparative analysis also focuses on scalability parameter with various benchmark dataset sizes. Outcomes of this work help others to choose the algorithm to implement in their application.

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Vol.3 (3-4) 37-43 Jul – Oct 2018, ISSN 2455-5053 Science Spectrum

Enhancing Violacein production using cost effective production medium by *Chromobacterium violaceum* in Bubble column reactor

Palukurty Mary Anupama*, Somalanka Subba Rao, Darsi Gurumahesh
Dept. of Chemical Engineering, ANITS, Sangivalasa, Visakhapatnam
***For Correspondence:** anupamabt.che@anits.edu.in

Abstract
Violacein is a violet colored pigment that has gained much attention in the recent decade due to its wide variety of applications. This antimicrobial and anticancerous drug is produced by submerged fermentation using cost effective, optimized medium obtained from previous studies. The medium components are as follows- wheat bran- 4.82g/L, NaCl- 4.82 g/L and yeast extract- 3.41g/L. Production medium pH is maintained at 7, temperature 28°C and inoculum level of 4.77% (v/v) was added from seed medium. The bench scale optimized medium is added to a 5L fabricated bubble column reactor keeping 3L as the working volume. Extraction of the dye using ethyl acetate followed by drying has resulted in high production formation of 0.790g/L of optimized medium.
Key words: Violacein, *Chromobacterium violaceum*, submerged fermentation, reactor studies, Bubble column reactor.

Introduction

The purple- blue natural pigment Violacein, produced by the gram negative, facultative anaerobic bacterium *Chromobacterium violaceum* (Kaufman et al, 1986), has wide variety of applications in the field of medicine. This pigment is known for its bactericidal (Dodou et al., 2017, Luciana et al., 2011), trypanocidal (Nelson Duran et al., 2016, Bilsland et al., 2018) as well as tumoricidal activities (Rettori and Duran, 1998, De Azevedo et al., 2000, de Carvalho et al., 2006). Having known its nutritional requirements and conditions that contribute to production of violacein (Tsutomu et al., 1987, Tsutomu et al., 1987) several inexpensive nutritional alternatives were investigated to decrease the cost of production of this potential dye (Om V. Singh, 2017).

Screening of nutrients and optimization of conditions were also carried out to increase the yield of violacein (Mary Anupama Palukurty et al., 2016). Studies were done using both solid state method as well as submerged methods of fermentation (Khairiyah and Wan Azlina, 2017, Vishnu and Palaniswamy, 2017). In the present investigation, a scale up of preliminary studies done by submerged fermentation method at

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Analysis of Existing Text Hiding Algorithms for Image Steganography Using TLNUS and AES

Jagadish Gurrala ✉ & P. Sanyasi Naidu

Conference paper | First Online: 21 December 2017

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Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 77)

Abstract

In the last few years, many researchers putting many efforts for getting good data hiding algorithms which was complex in design and undergo rigorous investigation on starting from secret text sizes ranges from 4 kB to 1 MB file has been embedded in it so far for the sake of more secure communication among mobile nodes and local area networks. As of now, several steganographic concepts were conceived on data hiding approaches deployed in insecure channel. In this paper, authors designed new data hiding algorithm approach proposed based on three protection layers has been used to maintain secrecy

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of the embedded message in a true color image. Here, the data is embedded randomly instead of sequentially by an image segmentation algorithm that uses two-level non-uniform segmentation. Advanced encryption standard algorithm has been used to encrypt the secret text. Different performance measures from the experimental results have shown the reasonable prototype of the proposed steganography algorithm. The result after comparing the proposed algorithm and the wide spectrum of steganographic schemes confirm that the stego image with medium perception ratio has been reached even if the stego image holds a large amount of data with good visual quality and working under jpeg and gray-scale images and also resistant to statistical and visual problems.

Keywords

Steganography **AES** **Data hiding process**

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A Study of Clustering Techniques for Wireless Sensor Networks

Neeharika Kalla & Pritee Parwekar

Conference paper | First Online: 21 December 2017

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Abstract

Wireless sensor network (WSN), in recent times, has been exhibiting potential in variety of applications like military surveillance, disaster management, and wildlife monitoring. In these applications, humans cannot access the place either to deploy the sensors or to monitor the sensors as the environment is inhospitable. Therefore, the sensors are expected to be remotely deployed and to operate in an autonomous mode. To support scalability, sensor nodes are formed or organized into clusters and the clusters formed are without overlap and disjoint. In this paper, classification of clustering attributes is presented from the various published clustering algorithms of WSN. The

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clustering schemes are compared based on the metrics such as sensor mobility, overlap of clusters, position awareness, efficient energy-based, uniform clustering, and stability of cluster.

Keywords

Wireless sensor network **Clustering**

Base station **Cluster head**

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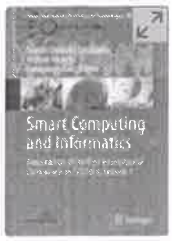

Smart Computing and Informatics pp 403–411

Comparison between Genetic Algorithm and PSO for Wireless Sensor Networks

Pritee Parwekar ✉, Sireesha Rodda & S. Vani Mounika

Conference paper | First Online: 21 December 2017

1183 Accesses | **7** Citations

Part of the Smart Innovation, Systems and Technologies book series (SIST,volume 77)

Abstract

One of the most promising algorithms for network optimization is the particle swarm optimization (PSO) and genetic algorithm (GA). The paper is about comparing these two as applied to wireless sensor networks. If a sink is placed at a longer distance from the sensors then the battery life (energy) drains faster, and it reduces the life of the network. Our analysis shows that optimized clustering technique of sensors can minimize the communication distance and can help to increase the network stability. GA and PSO can optimize the cluster formation of sensors. Simulation results have shown us that PSO performs better than GA

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for clustering algorithms in wireless sensor networks.

Keywords

Wireless sensors **Network**

Ad hoc networks **Clustering**

Genetic algorithm

Particle swarm optimization

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Information Systems Design and Intelligent Applications pp 909–915

A Study of the Optimization Techniques for Wireless Sensor Networks (WSNs)

Pritee Parwekar ✉, Sireesha Rodda & Neeharika Kalla

Conference paper | First Online: 02 March 2018

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Abstract

WSN has become one of the important technologies in the present decade. Energy consumption is the major challenge in the field of wireless sensor network. In WSN, there are some hard problems that cannot be solved in deterministic time. These hard problems can be solved by using optimization techniques. Clustering, routing, node localization, maintenance of the nodes, etc., are some of the hard problems that could be addressed. The main aim of these techniques is to provide the solution within specific time and also to minimize the consumption of the energy thus prolonging the lifetime of the network.

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SPSG Based Estimation Of Radar Cross Section For A Perfectly Conducting Sphere And Plasma Generated Sphere In Active Stealth Technology

Kolluri Sri Ranga Rao[1] **Gottapu Sasi Bhushana Rao[2]** **Swathi Nambari[2]**

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Abstract

Stealth innovation is critical in making a target undetectable to enemy radar. Stealth is the specialty of attempting to cover up or to dodge discovery. It is a low discernible innovation. In Stealth Technology, numerous signatures are to be overseen for an object, in which most Radar systems utilize radar cross section (RCS) for separating targets and characterizing them as to Stealth. In dynamic stealth innovation, an object is covered with plasma, consequently decreasing its RCS and making it imperceptible to enemy radar. The Proposed algorithm for estimating radar cross section of plasma sphere is the Spherical Polar Scattering Geometry (SPSG) in which the diffusing parameters are characterized and the physical interpretation of these parameters helps envisioning the system of the dissipating procedure. Argon gas is considered for plasma generation. An SPSG algorithm is developed in this investigation for evaluating RCS for a metal Sphere and plasma sphere at specified frequencies with specific width.

Keywords RCS, stealth, plasma frequency, spherical polar scattering geometry

1. INTRODUCTION

Most radars utilize RCS as a method for segregation of targets/objects and their grouping with respect to stealth, much of the time. In this manner, exact expectation of target RCS is basic keeping in mind the end goal to plan and create vigorous separation calculations. Furthermore, measuring and distinguishing the dispersing centres(sources) for a given target helps in creating RCS diminishment methods. Stealth alludes to the specialty of endeavoring to cover up or to dodge discovery. It is a low 'perceptible innovation. There are distinctive marks accessible. Marks are those qualities by which weapon frameworks might be distinguished, perceived, and locked in. The change of these marks can enhance the survivability of military or naval systems, prompting enhanced adequacy. Signature identification usually sums to the discovery of the electromagnetic mark of a question. Stealth is an array of strategies, which makes a system harder to discover and assault. Accomplishing Stealth highlights includes the lessening of active and passive signatures. Active signature is characterized as all the noticeable outflows from a stage: acoustic, compound, radar and UV and so forth. Passive signature is characterized as all observables on a stage that require outside light: attractive and gravitational oddities; impression of daylight and frosty external space. The plasma is the fourth condition of substance. It is a blend of electrons, particles and impartial particles and is electrically unbiased. Since the accused particles can interface of the electric and the attractive field of the em wave, the em wave will be scattered, refracted and additionally ingested when it strikes the plasma. Subsequently Plasma covers on targets helps in getting less RCS.

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I. Introduction
Cell phone technology has enormous changes in the last decade. The numbers of cell phones and cell towers are increasing day by day. Cell tower antennas transmit in the frequency range of 869 - 894 MHz (CDMA), 935 - 960 MHz (GSM900) and 1810 – 1880 MHz (GSM1800). Also, 3G base station antenna transmits in the frequency range of 2110 – 2170 MHz. The cell towers transmit a power of 2025 watts and mobile phone transmits a power of 1-2 watts, the radiation from the mobile phone and cell towers could cause serious threat to the human health due to Electromagnetic field (EMF) radiations from mobile towers and mobile handsets. People living or working within 10's of meters from the tower will receive the stronger signal than required for mobile communication. In India, crores of people reside within these high radiation zones. International Commission on Non-Ionizing Radiation Protection (ICNIRP) studies possible adverse effects on human health from exposure to non-ionizing radiation [1]–[2].

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Proceedings of 2nd International Conference on Micro-Electronics, Electromagnetics and Telecommunications pp 401–407

Multiband Characteristics of the Slot-Loaded Aperture Fed Antenna

B. Deepa, B. Roopa & Anil Kumar Patnaik

Conference paper | First Online: 07 September 2017

993 Accesses

Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 434)

Abstract

Etching multi-resonant shapes on the radiating patch of a microstrip antenna is often used to interpret multiband characteristics. In this paper, such a multiband antenna is designed using aperture-coupled feed. The proposed multi-resonant geometry captivates the advantages of both planar microstrip patch antenna (MPA) and the aperture feed system. The antenna is simulated in high-frequency structure simulation (HFSS) tool and analyzed using radiation characteristics plots like reflection

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This paper clearly describes the application of the different published optimization techniques in the field of WSN.

Keywords

Wireless sensor network **Optimization**

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Information Systems Design and Intelligent Applications pp 963–970

Encryption Model for Sensor Data in Wireless Sensor Networks

Anusha Vangala & Pritee Parwekar

Conference paper | First Online: 02 March 2018

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Part of the Advances in Intelligent Systems and Computing book series (AISC,volume 672)

Abstract

Wireless sensor networks have become very prevalent in many industries due to its ease of implementation, high performance, and applicability in numerous areas. The widespread use of this technology brings with it the challenge of providing confidentiality to the data that wireless sensor network carries. The challenge is due to the limitation of resources of energy, memory, and computational power. This paper describes a model for encrypting the sensor data after it is collected by the sink from the sensor. This paper discusses the evolution of the model for encrypting this data from a very simplified scheme with a single key to a more sophisticated scheme which performs dua

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encryption over the data. The models may implement any symmetric cryptographic scheme with the encryption implemented at the sink and the decryption implemented at the base station.

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Intelligent Engineering Informatics pp 119–128

Social Group Optimization (SGO) for Clustering in Wireless Sensor Networks

Neeharika Kalla & Pritee Parwekar

Conference paper | First Online: 11 April 2018

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Abstract

Wireless Sensor Network (WSN) is a domain which has its application in the variety of fields like military, disaster management, environment monitoring. Energy consumption is one of the key challenges in the field of WSN where researchers are strongly exploring and discovering new techniques or methods. Direct or hop-by-hop transmission of data from the node to the BS leads to more number of transmissions. Clustering is applied to reduce the number of transmissions. Nodes can consume less energy if the distance between node to node or from node to BS is less. An optimization technique is used to minimize the

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transmission distance and to dynamically select the number of cluster heads. Social Group Optimization (SGO) is implemented, and the results are compared with Genetic Algorithm (GA) and Particle Swarm Optimization (PSO).

Keywords

Wireless Sensor Network

Social Group Optimization **Clustering**

Sensor nodes **Base station** **Optimization**

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In Wireless Sensor Network Environment, there is a lot of scope to incorporate security considerations in various aspects of the architecture. While the sink reads the data from the sensor and dumps the aggregated data to the base Station, there is a possibility of loss of confidentiality of data. Any third party may read the data and misuse it. Hence it is vulnerable to snooping by the attacker. The current paper presents an enhanced model in order to improve confidentiality. This paper analyses the weaknesses of the previous scenarios and proposes improvements on them by making use of mathematical operations to manipulate the keys used for the encryption of each sensor. The work culminates into a proposed Scenario 1.7 that can provide enhanced security over the previous models with comparable time taken for security operations in the sink.

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The encryption model described in [1] focused on increasing the confidentiality of the data being transferred between the sensor and the sink. The Wireless Sensor Architecture consists of a mobile sink which moves from sensor to sensor to collect the data. The data collected from the sensors is dumped at the base station for further processing or use. For keeping the data confidential, the sink reads the data from a sensor, encrypts the data using AES algorithm and then stores the data in an encrypted format. This procedure was repeated for every sensor in the network field.

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I. Introduction

Online companion has gained tremendous momentum in recent times for business, politics, entertainment, etc. Social media such as Twitter, Facebook, WhatsApp, etc. became the popular medium for online companion and attaining the response from worldwide. These responses include one's sentiment or opinion towards any specific target such as individuals, events, topics, products, organizations, services, etc. [1]. The sentiment is an opinion of an individual towards a specific target. It may be either positive or negative. Manual extraction of the sentiment from social media is a tedious job for individuals or organizations. Therefore, an automated system is required to analyze the sentiment without human interference.

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Abstract:

Smart antennas are of tremendous importance in mostly radar applications and wireless communication. The dispute of the current wireless communication is to laydown dependable and wide service, which provide the required capacity for communication. Smart antenna systems make use of adaptive beam forming algorithms to direct the main beam toward the user direction and eliminate the interfering signals of the same frequency from other directions without altering the position of antenna. In this paper a comprehensive study of beamforming techniques using least mean square (LMS) algorithm, normalized least mean square (NLMS) algorithm and sign error least mean square (SLMS) algorithm are done. The preciseness by which the beam is formed towards the user and the interferers are observed. It was found that the accuracy depended on step size, which is utilised in these algorithms.

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Microelectronics, Electromagnetics and Telecommunications pp 325–334

A Compact Pattern Reconfigurable Antenna for WiMAX Application

Devi Perla ✉ & Rajya Lakshmi Valluri

Conference paper | First Online: 26 January 2018

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Part of the Lecture Notes in Electrical Engineering book series (LNEE,volume 471)

Abstract

The chapter describes the design of a Compact Radiation Pattern Reconfigurable Antenna (RPRA). The RPRA can reconfigure its radiation pattern without changing its polarization and operating frequency. The antenna is placed on FR4 substrate of thickness 1.6 mm and switch technique is being used. The antenna can change its radiation pattern based on the state of the switch which changes current distribution on the antenna. The antenna resonates at 3.3 GHz frequency and is useful for WiMAX application. Simulations were done with HFSS.

Keywords

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I. Introduction

Smart antennas give excellent performance compared to existing antennas with respect to power consumption, user capacity as well as suppression of noise [1]. They are able to augment the useful received signal and reduce the interference signal using spatial filtering. Smart antennas have two main aspects. One is position calculation and the other one is beam forming. Basically array elements are utilised to obtain different versions of the same signal from a remote source which are placed at various positions. The signals are then manipulated to obtain the exact location of the source. Then the array directs the main lobe of the beam pattern towards the actual user. By this method, the maximum power will be radiated towards the actual user, which will result in a very good gain in that particular direction [5]. Smart antenna also can be utilised to achieve higher network capacity, mitigation of interference, frequency reuse, and to reduce the entire infrastructure costs [2]. Smart antenna being an adaptive array automatically adjusts to the surroundings. That is as the user signal and the interference signal changes the position, the beam pattern also changes the direction [3]. During the time of designing the array, the weights to be assigned to the channel is flexible and is finalised at the time of signal processing to meet the requirements. The antenna beam pattern has to be adjusted always as the null position should every time point in the moving interference direction as the interference will be moving slowly. An adaptive array antenna will always adjust the weights with an intention to attain the desired pattern [5].

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Miniaturized Textile Antenna Using Electromagnetic Band Gap (EBG) Structure

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Abstract

A textile antenna is a crucial component for any wireless body-centric communication. It is used to establish body-to-body or on-body communications. The proposed textile antenna is created using circular patch and staircase slots. The textile antenna without Electromagnetic band gap (EBG) structure operates at 8.9 GHz frequency and a combination of EBG structure with vias operate at 2.03 GHz frequency. The textile antenna is miniaturized using EBG structure with four vias.

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Patch Rotation-Based Frequency Reconfigurable Antenna for Wireless Applications

Perla Devi & Valluri Rajya Lakshmi

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Abstract

Frequency reconfigurable antenna is proposed in this chapter. The antenna structure consists of three patches namely rectangular patch, circular patch, and square patch. These patches are placed on Rogers RT duroid substrate. Frequency reconfigurability is achieved by using patch rotation technique. Rotating the patches by 120° in each rotational stage, the resonant frequency of the antenna is changed. This design is useful for Personal Communication System (PCS), Wi-Fi, and Wi-MAX applications.

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