

## Alzheimers Disease – A Review

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### ABSTRACT

Alzheimer's disease (AD) is the most common cause of dementia in older adults and an important public health problem. The purpose of this review article is to provide a brief introduction to AD and the related concept of mild cognitive impairment (MCI). The article emphasizes clinical and neurobiological aspects of AD and MCI that medical students should be familiar with. In addition, the article describes advances in the use of biomarkers for diagnosis of AD and highlights ongoing efforts to develop novel therapies. In this review, current understanding of the epidemiology, genetics, pathology and pathogenesis of Alzheimer's disease is outlined, before its clinical presentation and current treatment strategies are discussed. Finally, the review discusses how our enhanced understanding of Alzheimer pathogenesis, including the recognition of a protracted preclinical phase, is informing new therapeutic strategies with the aim of moving from treatment to prevention.

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## A Review-Synthesis of Antenna Arrays using Optimization Algorithms By Reducing Side Lobe Levels

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### ABSTRACT

Antenna array design is one of the most imperative electromagnetic optimization problems of current interest. In the antenna arrays the side lobe level (SLL) is main problem which causes waste of energy. In this paper, different evolutionary algorithms are presented for reduction of side lobe levels of antenna arrays to save power and improve Quality of Service (QoS) by ensuing maximum radiation in desired direction. The algorithms are Genetic Algorithm (GA), Particle Swarm Optimization (PSO), Flower Pollination Algorithm (FPA), Dragonfly Algorithm (DA), Invasive Weed Optimization Algorithm (IWO), Enhanced Firefly Algorithm (EFA), Cuckoo Search Chicken Swarm Optimization (CSCSO), Artificial Bee Colony (ABC), Ant Colony Optimization (ACO), Cat Swarm Optimization (CSO), Whale Optimization Algorithm (WOA), Chicken Swarm Optimization (CSO).

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## Survey on Corona Virus– A Review

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### ABSTRACT

Over the years, corona viruses (CoV) have posed a severe public health threat, causing an increase in mortality and morbidity rates throughout the world. The recent outbreak of a novel corona virus, named severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) caused the current Corona virus Disease 2019 (COVID-19) pandemic that affected more than 215 countries with over 23 million cases and 800,000 deaths as of today. The situation is critical, especially with the absence of specific medicines or vaccines; hence, efforts toward the development of anti-COVID-19 medicines are being intensively undertaken. One of the potential therapeutic targets of anti-COVID-19 drugs is the angiotensin-converting enzyme 2 (ACE2). ACE2 was identified as a key functional receptor for CoV associated with COVID-19. ACE2, which is located on the surface of the host cells, binds effectively to the spike protein of CoV, thus enabling the virus to infect the epithelial cells of the host. Previous studies showed that certain flavonoids exhibit angiotensin-converting enzyme inhibition activity, which plays a crucial role in the regulation of arterial blood pressure. Thus, it is being postulated that these flavonoids might also interact with ACE2. This postulation might be of interest because these compounds also show antiviral activity in vitro. This article summarizes the natural flavonoids with potential efficacy against COVID-19 through ACE2 receptor inhibition.

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## Lung Cancer Detection-A Review

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### ABSTRACT

The Lung Cancer is one of the most common causes of death in people. Early detection of this cancer will increase the survival rate. Usually, cancer detection is done manually by radiologists that had resulted in high rate of False Positive (FP) and False Negative (FN) test results. Currently Computed Tomography (CT) scan is used to scan the lungs, which is much efficient than X-ray. In this research paper, a Computer Aided Detection (CADe) system for detecting lung cancer is used. This proposed system uses various image processing techniques to detect the lung cancer and also to classify the stages of lung cancer. Thus the rates of human errors are reduced in this system. As the result, the rate of obtaining false positive and (FP) False Negative (FN) has reduced. In this system, MATLAB has been used to process the image. Region growing algorithm is used to segment the ROI (Region of Interest). The SVM (Support Vector Machine) classifier is used to detect lung cancer and to identify the stages of lung cancer for the segmented ROI region. This research paper will produce more accuracy when compared to other existing systems.

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## Optimized Medical Image Fusion Based on Interval-Valued Intuitionistic Fuzzy Sets

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### ABSTRACT

Multimodal medical image fusion is the process of combining two multimodal medical images to increase the quality and to extract maximum information from the output image for better treatment and precise diagnosis. The fused image obtained from non-fuzzy sets, slacks with correlative information. Compared with fuzzy set theory, intuitionistic fuzzy sets (IFS) are resolved to be more appropriate for civilian and clinical image processing as more uncertainties are estimated. In this paper, an algorithm based on an interval-valued intuitionistic fuzzy set (IVIFS) is presented for efficiently fusing multimodal medical images and the final fused image is passed through a median filter to remove noise. Then, orthogonal teaching–learning-based optimization (OTLBO) is introduced to optimize combination factors that change under teaching phase, and learner phase of OTLBO. Finally, the fused image is achieved using optimal coefficients. Simulations on few sets of multimodal medical images are performed and contrasted with the current prevailing strategies, for example, a fuzzy transform and an intuitionistic fuzzy set. The prevalence of the proposed technique is introduced and is supported. The output fused image superiority is moreover checked with various quality estimations, for instance, entropy, spatial frequency (SF), average gradient (AG), and so on.

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# Python Based Multimodal Medical Image Fusion for Detection of Alzheimer's Disease

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## Abstract

Alzheimer's disease is the most common cause of dementia worldwide, with the prevalence continuing to grow in part because of the aging world population. This can be compared and identified using image fusion of MRI (Magnetic Resonance Imaging) and SPECT (Single Photon Emission Computed Tomography). An image fusion is a process used to increase the visual interpretation of images in various applications. It integrates the necessary features of two or more images into a single image without introducing artifacts. The traditional image fusion methods are generally successful at inserting spatial detail into the multispectral imagery despite the color information in the mechanism is distorted. This paper presents the fusion of multimodal medical images with the help of python language and the results are compared in Alzheimer's disease (AD).

*Keywords:* Alzheimer's; image fusion; MRI; SPECT; multispectral; python

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## 1. Introduction

Alzheimer's disease is also called as senile dementia the most common form of dementia [1, 2, 3] in people. Alzheimer's disease [4, 5, 6] is an irreversible disease of the brain that affects a person's memory, thinking, and other abilities. The disease is named after Dr. Alois Alzheimer. In 1906, Dr. Alzheimer noticed changes in the brain tissue of a woman who had died of an unusual mental illness. Her symptoms included memory loss, language problems, and unpredictable behaviour. After she died, he examined her brain and found many abnormal clumps (now called amyloid plaques) and tangled bundles of fibers (now called neurofibrillary, or tau tangles). Figure 1 shows the brain affected image by Alzheimer's disease.

Alzheimer's disease is a dynamic issue that causes synapses to die (degenerate) and bites the dust. Alzheimer's disease is the most widely recognized reason for dementia - a ceaseless decrease in deduction, conduct and social aptitudes that upsets an individual's capacity to work autonomously. The early indications of the malady might be overlooking ongoing occasions or discussions. As the infection advances, an individual with Alzheimer's sickness will create extreme memory disability and lose the capacity to complete ordinary undertakings. Ebb and flow Alzheimer's illness prescriptions may briefly improve indications or moderate the pace of decline. There is no treatment that fixes Alzheimer's sickness or adjusts the infection procedure in the mind. In cutting edge phases of the illness, inconveniences from extreme loss of mind work, for example, lack of hydration, ailing health or contamination - bring about death.

To get a finding of Alzheimer's, the individual more likely than not encountered a decrease in intellectual or conduct capacity and execution contrasted and how they were already. This decrease must meddle with their capacity to work at work or in regular exercises.

- (1) Structural and practical changes, including unobtrusive changes to hippocampal shape and surface, decay in territories outside of hippocampus, and disturbance to useful systems, are noticeable in presymptomatic subjects before hippocampal decay;
- (2) In subjects with strange  $\beta$ -amyloid affidavit ( $A\beta^+$ ), biomarkers become anomalous in the request anticipated by the amyloid course speculation;
- (3) Cognitive decrease is more firmly connected to tau than  $A\beta$  affidavit;
- (4) Cerebrovascular hazard variables may cooperate with  $A\beta$  to build white-matter (WM) variations from the norm which may quicken Alzheimer's infection (AD) movement related to tau irregularities;
- (5) Different examples of decay are related with debilitation of memory and chief capacity and may underlie mental indications;
- (6) Structural, practical, and metabolic system network are disturbed as AD advances. Models of prion-like spreading of  $A\beta$  pathology along WM parcels foresee known examples of cortical  $A\beta$  affidavit and decreases in glucose digestion;

## Python Based Multiple Face Detection System

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### ABSTRACT

Face affirmation from a video is a standard subject in biometrics investigation. Face affirmation development has commonly stood apart due to its huge application worth and market potential, for instance, a nonstop video surveillance structure. It is comprehensively perceived that the face affirmation has expected a huge activity in perception system as it needn't waste time with the article's co-action. We plan a persistent face affirmation system subject to IP camera and picture set figuring by technique for OpenCV and Python programming improvement. The system fuses three segments: Detection module, planning module, and affirmation module. This paper gives capable and amazing estimations to constant face recognizable proof and affirmation in complex establishments. The figurings are executed using a movement of sign planning techniques including Local Binary Pattern (LBP), Haar Cascade feature. The LBPH figuring is utilized to evacuate facial features for brisk face ID. The eye revelation count reduces the fake face distinguishing proof rate. The recognized facial picture is then arranged to address the heading and addition the separation, along these lines, keeps up high facial affirmation precision. Colossal databases with faces and non-faces pictures are used to get ready and endorse face revelation and facial affirmation counts. The estimations achieve a general veritable positive pace of 98.8% for the face area and 99.2% for right facial affirmation.

**Keywords--** Biometrics, LBP, OpenCV, Python, Surveillance.

### INTRODUCTION

The objective of this article is to give a simpler human-machine connection routine when client verification is required through face identification and acknowledgment. With the guide of a standard web camera, a machine can identify and perceive an individual's face; a custom login screen with the capacity to channel client get too dependent on the clients' facial highlights will be

created. The goals of this proposition are to give a lot of location calculations that can be later bundled in an easily portable system among the diverse processor designs we find in machines (PCs) today. These calculations must give at any rate a 95% effective acknowledgment rate, out of which under 3% of the distinguished countenances are bogus positives.

As of late, biometric-based procedures [1-4] have risen as the most encouraging alternative for perceiving people. These strategies look at a person's physiological and conduct attributes to decide and find out their personality as opposed to verifying individuals and giving them access to physical spaces by utilizing passwords, PINs, keen cards, plastic cards, tokens or keys. Passwords and PINs are difficult to recall and can be taken or speculated effectively; cards, tokens, keys, and such can be lost, overlooked, purloined, or copied; attractive cards can get defiled and incomprehensible. Notwithstanding, a person's organic characteristics can't be lost, overlooked, taken, or produced. Face acknowledgment is one of the least nosy and quickest biometrics contrasted and different strategies, for example, finger print [5-6] and iris acknowledgment. For instance, in observation frameworks [7], rather than expecting individuals to put their hands on a peruser (finger printing) or position their eyes before a scanner (iris acknowledgment), face acknowledgment frameworks [8-9] subtly accept photos of individuals' countenances as they enter a defined territory. Neural Networks [10], the S-AdaBoost calculation, Support Vector Machines (SVM) [11], and the Bayes.

### PROBLEM DEFINITION

Over the previous decade face identification and acknowledgment have risen above from exclusive to mainstream territories of research in PC vision and one of the better and effective utilization of picture examination and calculation based comprehension. As a result of the inborn idea of the issue, PC vision isn't just a software engineering territory of research, yet also, the object of neuroscientific and mental examinations additionally, for the most part on account of the general conclusion that propels in



## Color Image Compression using Singular Value Decomposition and Back Propagation Neural Network

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### ABSTRACT

To minimize the memory size while storing images leads to the requirement of compression. During the digital transmission of images over the communication channel, there is a need to minimize the data to be transmitted for the effective utilization of bandwidth of the communicative channel. Singular Value Decomposition is one of the most effective and flexible tool to minimize data. The work demonstrates the usage of Singular Value Decomposition (SVD) in image compression optimized by Back Propagation Neural Network (BPNN).SVD-based image compression scheme utilizes smaller number of ranks to represent the original image matrix.

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## A Review and Study of Medical Image Computing in Biomedical Applications

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### ABSTRACT

Biomedical image computing has grown significantly and drawing skills in applied mathematics, computer science, engineering, statistics, physics, biology and medicine. Medical imaging is the technique used to classify or research diseases through photographs of body parts for medical use. Computer-assisted diagnostic therapy is now an integral part of clinical routine. Medical imagery is increasingly evolving due to the advances in image processing technology, including image recognition, analysis and improvement. Picture processing increases the percentage and number of tissues detected. The main purpose of this paper is to present basic principles and techniques for the processing of medical images and to foster interests in further study and research into the processing of images. This paper also discusses the computation of medical images and reviews relevant scientific work in this field and describes the latest technical developments.

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## Performance Analysis of Power Spectrum and Power delay Profile for 5G Network in LoS and NLoS Environment Utilizing FD-MIMO in ULA Structure

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### ABSTRACT

Wireless communications gaining massive demand as the need for faster video streaming, augmented reality, virtual reality, 5G based IoT applications also network congestion continues to increase hastily, increasing user-specific services, machine learning, straining the radio access network (RAN) to deliver increased spectrum efficiency, minimizing power consumption, improvement in data rate. For LTE/LTE-A network operation specifications provided by third-generation partnership project(3GPP) in release 14/15 guarantees to provide qualitative service. End-user experiences qualitative services in LTE/LTE-A network which utilizes two-dimensional (2D) active antenna array systems (AAS) in which the beamforming is formed in both azimuthal and elevation. This type of beamforming is known as 3D-beamforming. An antenna that uses a 3D beamforming technique is known as Full Dimensional MIMO. In this paper, the analysis of 5G new RAN power spectrum and power delay profile at 10GHz frequency 20MHz of channel bandwidth is analyzed. Simulation results show less path loss and more received power in Directional Power Delay Profile (PDP) than an omnidirectional PDP. Simulation is carried on in MATLAB based NYUSIM open-source software.

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# *Improving spectral efficiency and low latency in 5G framework utilizing FD-MIMO*

**C. H. Nishanthi & N. Ramamurthy**

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**An Efficient Image Denoising by Daubechies, Symlets, Coiflets and BiorSplines  
Wavelets**

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*Abstract*— During transmission and the influence of environment, transmission channel, and other factors, images are inevitably contaminated by noise during acquisition, compression, and transmission, leading to distortion and loss of image information. In this project, the image corrupted by additive random noise can easily be denoised by using Daubechies, Symlets, Coiflets and BiorSplines Wavelets.

*Keywords*— de-noising; Daubechies; Symlets; Coiflets; BiorSplines;

I. INTRODUCTION

Owing to the influence of environment, channel, and other factors, images are inevitably contaminated by noise during acquisition, compression, and transmission, leading to distortion and loss of image information. With the presence of noise, possible subsequent image processing tasks, like video processing, image analysis, and tracking, are adversely affected [1]. Therefore, image denoising plays an important role in modern image processing systems. Image denoising is to urge obviate noise from a loud image, so on restore truth image. However, since noise, edge, and texture are high frequency components, it's difficult to differentiate them within the method of denoising and thus the denoised images could inevitably lose some details. Overall, recovering meaningful information from noisy images within the method of noise removal to urge high quality images may be a crucial problem nowadays. In fact, image denoising could also be a classic problem and has been studied for an extended time. However, it remains a challenging and open task. The foremost reason for this is often that from a mathematical perspective, image denoising is an inverse problem and its solution isn't unique. In recent decades, great achievements are made within the world of image denoising [2]. Over the past decade, wavelet transforms have received plenty of attention from researchers in many different areas. Both discrete and continuous wavelet transforms have shown great promise in such diverse fields as compression , image denoising, signal processing, computer graphics , and pattern recognition to call only a few of . In de-noising, single orthogonal wavelets with a single-mother wavelet function have played an important role. De-noising of natural images corrupted by Gaussian noise using wavelet techniques is extremely effective thanks to its ability to capture the energy of a symbol in few energy transform values [3].Wavelets are of wide potential use in statistical contexts. The basics of the discrete wavelet transform are reviewed employing a filter notation that's useful subsequently within the paper. A 'stationary wavelet transform', where the coefficient sequences aren't decimated at each stage, is described [4]. Two different approaches to the event of an inverse of the stationary wavelet transform are begun. The appliance of the stationary wavelet transform as an exploratory statistical method is discussed, in conjunction with its potential use in nonparametric regression. How of local spectral density estimation is developed [5]. This involves extensions to the wavelet context of ordinary statistic ideas just like the periodogram and spectrum [6]. Denoising with the traditional (orthogonal, maximally decimated) wavelet transform sometimes exhibits visual artifacts like Gibbs phenomena

# An Efficient Image Denoising by Daubechies, Symlets, Coiflets and BiorSplines Wavelets

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**Abstract—** During transmission and the influence of environment, transmission channel, and other factors, images are inevitably contaminated by noise during acquisition, compression, and transmission, leading to distortion and loss of image information. In this project, the image corrupted by additive random noise can easily be denoised by using Daubechies, Symlets, Coiflets and BiorSplines Wavelets.

**Keywords—**de-noising; Daubechies; Symlets; Coiflets; BiorSplines;

## I. INTRODUCTION

Owing to the influence of environment, channel, and other factors, images are inevitably contaminated by noise during acquisition, compression, and transmission, leading to distortion and loss of image information. With the presence of noise, possible subsequent image processing tasks, like video processing, image analysis, and tracking, are adversely affected [1]. Therefore, image denoising plays an important role in modern image processing systems. Image denoising is to urge obviate noise from a loud image, so on restore truth image. However, since noise, edge, and texture are high frequency components, it's difficult to differentiate them within the method of denoising and thus the denoised images could inevitably lose some details. Overall, recovering meaningful information from noisy images within the method of noise removal to urge high quality images may be a crucial problem nowadays. In fact, image denoising could also be a classic problem and has been studied for an extended time. However, it remains a challenging and open task. The foremost reason for this is often that from a mathematical perspective, image denoising is an inverse problem and its solution isn't unique. In recent decades, great achievements are made within the world of image denoising [2]. Over the past decade, wavelet transforms have received plenty of attention from researchers in many different areas. Both discrete and continuous wavelet transforms have shown great promise in such diverse fields as compression , image de-noising, signal processing, computer graphics , and pattern recognition to call only a few of . In de-noising, single orthogonal wavelets with a single-mother wavelet function have played an important role. De-noising of natural images corrupted by Gaussian noise using wavelet techniques is extremely effective thanks to its ability to capture the energy of a symbol in few energy transform values [3]. Wavelets are of wide potential use in statistical contexts. The basics of the discrete wavelet transform are reviewed employing a filter notation that's useful subsequently within the paper. A 'stationary wavelet transform', where the coefficient sequences aren't decimated at each stage, is described [4]. Two different approaches to the event of an inverse of the stationary wavelet transform are begun. The appliance of the stationary wavelet transform as an exploratory statistical method is discussed, in conjunction with its potential use in nonparametric regression. How of local spectral density estimation is developed [5]. This involves extensions to the wavelet context of ordinary statistic ideas just like the periodogram and spectrum [6]. Denoising with the traditional (orthogonal, maximally decimated) wavelet transform sometimes exhibits visual artifacts like Gibbs phenomena within the neighborhood of discontinuities. The Cycle-Spinning averages the range of shifts; one circularly shifts the data and denoises the shifted data, then unshifts the denoised data. Applying this for each of range of shifts, and averaging the several results so obtained, produces a reconstruction subject to far weaker Gibbs phenomena than the sting based denoising using the traditional orthogonal wavelet transform[7]. Image Denoising may be a crucial a neighborhood of diverse image processing and computer vision problems. The important property of an honest image denoising model is that it should completely remove noise

## Color Image Compression using JPEG and DCT with Blocking and Subsampling

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**Abstract**— JPEG has been the foremost widely used compression standard within the world and therefore the most generally used digital image format, with several billion JPEG images produced a day. Therefore it's essential to compress the pictures by storing only the specified information needed to reconstruct the image. In this work, Different images in JPEG and PNG format have been compressed and decompressed using DCT. Any random image of any resolution or size is compressed at a consistent rate without degrading the standard of image.

**Keywords**—JPEG; DCT; Compression; Decompression; degradation;

### I. INTRODUCTION

JPEG could also be a commonly used method of lossy compression for digital images, particularly for those images produced by photography. The degree of compression is usually adjusted, allowing a selectable tradeoff between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality. Since its introduction in 1992, JPEG has been the foremost widely used compression standard within the planet and thus the foremost generally used digital image format, with several billion JPEG images produced each day [1]. First, the image should be converted from RGB into a special color space called YCbCr. Its three components Y, Cb and Cr. The Y' component represents the brightness of a pixel, and thus the Cb and Cr components represent the chrominance split into blue and red components. The YCbCr color space conversion allows greater compression without an enormous effect on perceptual image quality. The compression is more efficient because the brightness information, which is more important to the eventual perceptual quality of the image, is confined to at least one channel [2]. This more closely corresponds to the perception of color the human sensory system. The color transformation also improves compression by statistical decorrelation. The transformation into the Y'CbCr color model enables subsequent usual step, which is to reduce the spatial resolution of the Cb and Cr components called "downsampling" or "chroma subsampling". For the rest of the compression process, Y', Cb and Cr are processed separately and through a really similar manner. After subsampling, each channel must be split into 8×8 blocks. Relying on chroma subsampling, this yields Minimum Coded Unit blocks of size 8×8. If the data for a channel doesn't represent an integer number of blocks then the encoder must fill the remaining area of the unfinished blocks with some kind of dummy data. Next, each 8×8 block of each component (Y, Cb, Cr) is converted to a frequency-domain representation, employing a normalized, two-dimensional type-II discrete cosine transform (DCT), The DCT is typically mentioned as "type-II DCT" within the context of a family of transforms as in discrete cosine transform, and thus the corresponding inverse (IDCT) is denoted as "type-III DCT". Finally, the data reduction is completed by the subsampling of the colour information, the quantization of the DCT-coefficients and thus the Huffman encoding [3].

An image is usually defined as a matrix of pixel or intensity values. Compression is used to reduce the redundancy and randomness present within the image because to increase the storing capacity and efficiency level of the pictures [4]. Therefore it's essential to compress the photographs by storing only the required information needed to reconstruct the image. To compress any image, redundancy must be removed. Sometimes images having large areas of same color will have large redundancies and similarly images that have frequent and massive changes in color are getting to be less redundant and harder to compress[5]. The foremost objective of this paper is to reduce irrelevance and redundancy of

## Optimized Digital Image Watermarking by an Effective Implementation of DCT and DWT

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**Abstract—** Watermarking has been invoked as a tool for the protection of property rights of multimedia contents. Because of their digital nature, multimedia documents are often duplicated, modified, transformed, and diffused very easily. During this context, it is vital to develop a system for copyright protection, protection against duplication, and authentication of contents. The peak signal to noise ratio (PSNR) and normalized correlation coefficient (NCC) can be improved significantly with DCT+DWT watermarking.

**Keywords—**Watermark; DCT; DWT; Copyright; PSNR; NCC;

### I. INTRODUCTION

Watermarking has been invoked as a tool for the protection of property rights of multimedia contents. Due to their digital nature, multimedia documents are often duplicated, modified, transformed, and diffused very easily. During this context, it is vital to develop a system for copyright protection, protection against duplication, and authentication of contents. For this, a watermark is embedded into the digital data in such how that it's indissolubly tied to the data itself. Later on, such watermarks are often extracted to prove ownership to trace the dissemination of the marked run through the network, or simply to inform users about the identity of the rights- holder or about the allowed use of data. This paper deals the developing the watermarking schemes for digital images stored in both, spatial and transformed domain. During this project the most target is on the Discrete Cosine Transform (DCT) and Discrete Wavelet Transform (DWT) based development, to increase the robustness and to increase the claim, gain of embedding algorithm is optimized with the help of bacterial foraging optimization, so as that security is increased. The special care is taken so as that a minimum of 1 attack, having huge financial implications, are often sustained because of the in-built capacity of the watermarking scheme. Apart from this, since JPEG is that the foremost ordinarily used image format over World Wide Web, we pay special attention to robustness against noise attack. We propose to increase the robustness against some attacks by pre-processing the photographs. In this project, the correlation between the performance of the watermarking scheme against some attacks and thus the first image characteristics is presented. This watermarking scheme is robust against common image manipulations and attacks [1].

Digital Image watermarking techniques classified as private, semi private and public watermarking techniques. Privately watermarking technique the knowledge of cover image and secret key required to recover the watermark from the duvet image [2]. In semi-private or semi blind watermarking technique each the secrete key and also the watermark needed to extract the inserted watermark. In blind or public watermarking technique solely the secrete key's enough to extract the watermark [3]. Private watermarking techniques have high robustness than the other two techniques. But the disadvantage of private watermarking techniques is that they require original information to extract the watermark. the foremost necessities of any watermarking technique embody hardiness, visibility, and capability. Hardiness is that the strength of the watermark so as that it will rise up to totally different image process attacks like cropping, rotation and compression, etc. [4]. Visibility of the watermark related to imperceptibility so as that the looks of the watermarked image won't be degraded by the presence of the watermark. The capacity of the watermark defined because the quantity of data carried by it.



## Color Image Compression using Singular Value Decomposition and Back Propagation Neural Network

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**Abstract**—To minimize the memory size while storing images leads to the requirement of compression. During the digital transmission of images over the communication channel, there is a need to minimize the data to be transmitted for the effective utilization of bandwidth of the communicative channel. Singular Value Decomposition is one of the most effective and flexible tool to minimize data. The work demonstrates the usage of Singular Value Decomposition (SVD) in image compression optimized by Back Propagation Neural Network (BPNN). SVD-based image compression scheme utilizes smaller number of ranks to represent the original image matrix.

**Keywords**—Image compression; Singular Value Decomposition; Back Propagation Neural Network; Rank;

### I. INTRODUCTION

Data compression is an important application of linear algebra. To minimize the memory size while storing images leads to the requirement of compression. During the digital transmission of images over the communication channel, there is a need to minimize the data to be transmitted for the effective utilization of bandwidth of the communicative channel. Singular Value Decomposition is one of the most effective and flexible tool to minimize data. The work demonstrates the usage of Singular Value Decomposition (SVD) in image compression optimized by Back Propagation Neural Network (BPNN). SVD-based compression scheme utilizes smaller number of ranks to represent the primary image matrix. First, a straight-forward compression and decompression scheme are getting to be used to show the essential idea of reducing storage requirement with SVD. Second, various block-size are getting to be tested on the same image to match their effects on the quality of the compression. Third, a rank selection scheme that's adaptive to the complexity of the image is introduced and discussed [2]. The essential concept is to represent an image with size  $m$  by  $n$  as a two-dimensional  $a$  by  $b$  matrix. SVD is then applied to this matrix to urge the  $U$ ,  $S$ , and  $V$  matrices.  $S$  could also be a diagonal  $m$  by  $n$  matrix whose number of non-zero elements on the diagonal determines the rank of the primary matrix. The basic concept of the SVD-based compression scheme is to use a smaller number of ranks to approximate the primary matrix [3]. Instead of compressing the whole image directly, all popular compression techniques work on the sub-block of original image. The aim of this project is to require advantage of the uneven complexity of the primary image. If a number of the image is simple, then only a smaller of singular values must be used to achieve satisfactory approximation [4]. On the other hand, if the image is complex, then more singular values would wish to be utilized so as to require care of the image quality. A simple because of adaptively select the suitable ranks to be utilized in each sub-block is to specify the share of the sum of the singular values instead of a tough and fast number [5]. This scheme springs from the observation of the distribution of the singular values in each sub-block. When a sub-block contains complex image, its singular values are more opened than the one that contain a simple image [6].

What the SVD does is split a matrix into three important sub matrices to represent the data. Given the matrix  $M$ , where the size of  $a$  is  $a \times b$  where  $a$  represents the number of rows in the matrix, and  $b$  represents the number of columns,  $A$  can be broken down into three sub matrices  $M = X \Sigma Y^T$  where  $X$  is of size  $a \times a$ ,  $\Sigma$  is of size  $a \times b$  and is diagonal, and  $V^T$  is of size  $b \times b$ . It is required for matrix multiplication that the size of the columns of the first matrix must match up with the

# Miniaturized and Gain Enhancement of Tapered Patch Antenna Using Defected Ground Structure and Metamaterial Superstrate for GPS Applications

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**Abstract**—The main intention to present this work is to miniaturize and gain enhancement of a tapered microstrip patch antenna, which resonates for Global Positioning System (GPS) of L1 band at 1.575 GHz. To accomplish this, we present a new design configuration of a Tap-Shaped Defected Ground Structure (TSDGS). It has been utilized to switch the resonant frequency from 14.5 GHz to 1.575 GHz with no adjustment of areas of the actual Tapered Microstrip Patch Antenna (TMPA). The prototype antenna is fabricated on a Roger RT Duroid substrate merely  $58 \times 22 \text{ mm}^2$ . Conclusively, a miniaturization allowed up to 89.31%, with regard to the TMPA, is excellently accomplished. The gain of the proposed antenna is successfully enhanced with properly locating the metamaterial superstrate onto the basic patch antenna. A gain of 7 dBi improvement has been achieved. The proposed design process is done with two different solvers, ADS and HFSS.

## 1. INTRODUCTION

Currently, the increase of efficiency, bandwidth, and miniaturization of antennas has gotten significant need in commercial, satellite, and military wireless communication systems. Ku-band (12–18 GHz) is best known for its use in satellite broadcast communications, and it plays a good role in everyday human activities [1]. Microstrip antennas have certain restrictions like polarization problems, low gain, single operating frequency, low impedance bandwidth, and narrow bandwidth [2]. There are some techniques which have improved the performance capabilities of antenna parameters, which are fractal geometry [3], metamaterial [4–7], array configuration [8], Electromagnetic Band Gap structures (EBGs) [9], Substrate Integrated Waveguides (SIWs) [10], Defected Ground Structures (DGSs) [11, 12], different feeding techniques [13], multilayer antennas [14], Defected Microstrip Structures (DMSs) [15], Frequency Selective Surfaces (FSSs) [16], W shape slots, M-slots, and eight shape with proper location in a patch [17–19], and distinctive shapes or a combination of them are inserted as slits and notches on the surface of the patch to enhance the performance of a antenna [20]. The equivalent circuit of a DGS is composed of a tuned parallel LC resonating circuit which is series with a microstrip line. The effective inductance and capacitance values depend on the structure size and defect area. By changing the various etched off shapes with different dimensions, the required resonance frequency is obtained [21]. The different area shapes have the same role and the same characteristics of stopband, high impedance, slow wave effect, and miniaturization of size [22, 23].

DGS is one of the simple and different approaches to miniaturize a conventional patch antenna. It consists of single or multiple defects on the surface of ground plane, and it can be used for several applications. The idea of DGS has been built to improve the attributes of several microwave planar

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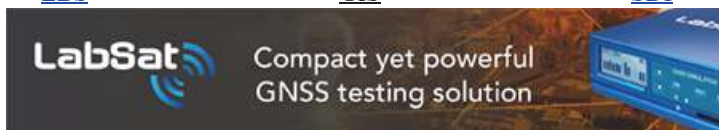
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3 Phase System

Phase Acht

# Geomagnetic Storms: Impact on GPS/GNSS signal delay over the low latitudes

Aug 2018 | [No Comment](#)

This article demonstrates TEC results at low latitude Indian region, Bangalore (13.020 N, 77.570 E) and Hyderabad (17.410 N, 78.550 E) on the days of high intensity storms (October 29th, 2003), medium intensity storms (March 17th, 2013) and low/no intensity storms (July 05th, 2018)

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Now a days more than hundred Global Navigation Satellite System (i.e. GPS, GLONASS, Galileo, Beidou, and IRNSS) signals are available everywhere all the time at free of cost. Hence, dependency on the GNSS technology has been increasing with more number of applications in almost all the fields for Position, Navigation and Time (PNT) estimation. The accuracy of GNSS in PNT estimation is being limited by

## Doubly-Selective Channel Estimation in FBMC-OQAM and OFDM Systems

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### ABSTRACT

We propose a method to estimate doubly-selective channels based on the time and frequency correlation of scattered pilots. To reduce the interference at the pilot and data positions, we apply an iterative interference cancellation scheme. Our method is applicable to arbitrary linear modulation techniques, with Orthogonal Frequency Division Multiplexing (OFDM) and Filter Bank Multicarrier Modulation (FBMC), being special cases. Simulations over doubly-selective channels show that our channel estimation method comes close to having perfect channel knowledge available. A downloadable Matlab code supports reproducibility.

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## Impact of Low Latitude Ionosphere Irregularities on GPS+NavIC (Combined) Position Error During Solar Flares

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### ABSTRACT

Global Navigation Satellite Systems (GPS, GLONASS, Galileo, BDS and NavIC) position, navigation and time (PNT) services in low latitudes are being affected significantly by the ionosphere and the impact varies with changes in space weather. Total Electron Content (TEC) and Rate of TEC Index (ROTI) are the parameters universally used to measure ionosphere dynamics. The aim of this paper is to study the variations of TEC, ROTI and GPS+NavIC (Navigation with Indian Constellation) position error during solar flares (one of the space weather events); using data collected from NavIC receiver station at Kurnool (15.79<sup>0</sup>N, 78.07<sup>0</sup>E), India, for the period of 4-12 September, 2017. Infact, the correlation between ROTI and GNSS based positioning error has been observed in many studies, evidences of such research suggesting that there is a possibility for correlation behaviour alteration during adverse space weather conditions. Hence, the correlation between ROTI and GPS+NavIC position error is also investigated to findout the interesting facts about solar flares impact. Results from this study, show that the intense solar flares(X-class) precedes the geomagnetic storm that follows with in the next 48-hours, leading to an increase in the values of TEC and ROTI. The correlation between ROTI and error in position coordinates (latitude, longitude and height) is positive with maximum correlation coefficient of 0.86.

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## Investigation of GPS-TEC Inconsistency and Correlation with SSN, Solar Flux ( $F_{10.7}$ cm) and Ap-index during Low and High Solar Activity Periods (2008 and 2014) Over Indian Equatorial Low Latitude Region

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### ABSTRACT

The ionosphere Total Electron Content (TEC) measurement using Global Positioning System (GPS) technology (GPS-TEC) is carried out over the equatorial low latitudes of Indian region viz; Bangalore ( $13.0^{\circ}$  N,  $77.5^{\circ}$ E), Hyderabad ( $17.5^{\circ}$ N,  $78.5^{\circ}$ E), Bhopal ( $23.0^{\circ}$ N,  $77.2^{\circ}$ E), Delhi ( $28.7^{\circ}$  N,  $77.2^{\circ}$ E), Ahmedabad ( $23.0^{\circ}$ N,  $72.5^{\circ}$ E) and Guwahati ( $26.0^{\circ}$ N,  $92.0^{\circ}$ E) for low solar activity (LSA *i.e.*, 2008) and high solar activity (HSA *i.e.*, 2014) periods of solar cycle 24. The measured GPS-TEC were analysed to report diurnal, day to day and monthly variation with equatorial low latitude, solar activity and geomagnetic conditions. Moreover, GPS-TEC variation is investigated to find the correlation with Sun Spot Number (SSN), Solar Flux ( $F_{10.7}$  cm) and Ap-index. From the results, it is found that the TEC is enhanced during HSA (2014) compared to LSA. However, a depletion is observed during pre-sunrise hours (4:00 hrs to 6:00 hrs) particularly in spring and autumn equinox periods of HSA (2014). Also, found that the equatorial ionization anomaly (EIA) crest which is occurred over Bhopal region during LSA (2008) is shifted to the higher latitudes (*i.e.* Delhi region) during HSA period (2014). Further, it is observed that Ap-index and  $F_{10.7}$  cm have the better correlation with GPS-TEC compared to SSN for both LSA (2008) and HSA (2014) periods. Additionally, it is also observed that the increased solar activity has negative impact on correlation between GPS-TEC and Ap-index and  $F_{10.7}$  cm.

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## Estimation and Correction of Carrier Frequency Offset to Improve the Performance of OFDM Systems

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### ABSTRACT

Orthogonal frequency division multiplexing (OFDM) is a special case of multicarrier transmission which transmits a stream of data over a number of lower data rate subcarriers. OFDM splits the total transmission bandwidth into a number of orthogonal and non-overlapping subcarriers and transmit the collection of bits called symbols in parallel using these subcarriers. This paper gives a total insight of various Peak -to Average Power Reduction (PAPR) techniques and principles of OFDM systems used in wireless communications. The research paper places a focus also on OFDM behaviors and techniques like Carrier Frequency Offset (CFO) estimation that improves performance of OFDM for wireless communications. Finally, the paper provides a number of wireless communication standards and many of the applications where OFDM systems are used.

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## DT-CWTFusion on Region of Interest (ROI) for Distorted Video

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### ABSTRACT

Restoring a scene distorted by atmospheric turbulence is a challenging problem in video surveillance. Image registration enables the geometrical alignment of two images and is widely used in various applications in the fields of remote sensing, medical imaging and computer vision. In this paper, we propose a novel method for mitigating the effects of atmospheric distortion on observed images. Region of interest (ROI) for each frame is taken, in order to extract accurate detail about objects behind the distorting layer. A simple and efficient frame selection method is proposed to select informative ROIs, only from good quality frames. Each ROI should be registered in order to reduce the distortion. The space varying problem can be solved by image fusion using complex wavelet transform. Finally contrast enhancement is applied.

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**Abstract:** Cross talk is one of the major issues in ASIC design for recent technologies lesser than 180nm. It will make more complications in larger designs like System on Chip (SoC) and Network on Chip. Crosstalk noise affects the timing performance of the entire chip. It will degrade the signal which is passing from one module to another module in chip. In ASIC implementation, cross talk removal circuits required to remove cross talk and it will take extra area and power apart from the application. To avoid the crosstalk and delay, in proposed method we have introduced Bus Encoding Method (BEM) with low power dissipation with less area. In this paper, we designed 18T full adder circuit as testing sequence generator for crosstalk analysis. With the help of modified architecture, we can achieve crosstalk avoidance by low area, low power.

**Published in:** 2017 International Conference on Intelligent Computing and Control (IC2C)

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 **Contents**

**I. Introduction**

In digital circuits, noise has become a major problem to reduce the performance of the entire system. To maintain the area, power, and delay, there are four basic principles have been needed such as to make clock tares fast, scaling the threshold voltage, improve the interconnect densities and high performance circuit. With the help of interconnect densities, the coupling capacitance can be improved as well as by using faster clock rates, on-chip slew time can be increased [1]. Normally, crosstalk is a type of noise which is introduced by unwanted coupling between two neighbouring signals. It can increase the crosstalk delay and decrease the signal integrity. We need to model interconnects, which holds the overall information of physical characteristics like the distance between the nets or overlap. Due to the power consumption and changing the logical level the noise causes delay and the overall system is a failure. To minimize the effects of Nano scale some methods are used such as buffer insertion, wire spacing, driver sizing, buzzer sizing. In this method, buffer sizing and driver sizing methods are so difficult to apply post rout stage [3].

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## Crosstalk Noise Analysis with RLC Coupled Interconnects in VLSI Circuits

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### Abstract

VLSI began in the 1970s when complex semiconductor and communication technologies were being developed. The rapid development of VLSI technology has reduced the minimum element size to a quarter of a micron and the switching period in units of peak seconds or fewer. As an outcome, degradation of high speed digital paths due to crosstalk. Crosstalk is a phenomenon in which the logic transmitted on a VLSI or network / cable circuit creates an undesired effect on an adjacent circuit or network / cable due to the capacitive coupling. The decrease of crosstalk in a VLSI connection has become much essential for digital circuits at high level. In this project estimation of crosstalk noise analysis with equally connected RLC interconnect in VLSI circuits is implemented with simulations results in CADENCE TOOLS.

**Keywords:** Crosstalk, Shielding, Signal Integrity (SI), Interconnects, NECN, FECN and Cadence tool.

### 1. Introduction

Changes in the scale of VLSI technology mean reducing the minimum element size to less than a quarter of a micron and changing the time in the form of peak seconds or less. For this reason, modern digital circuits face many problems, such as the appearance of interference in the circuit due to the little dimension, as well as due to the reduced space among the lines. Advances in the development of digital circuits and Internet allow for broadband signals needs data signals as high speed [1]. In this limitation, the interconnection design is compatible with broadband and rapidly changes signals without reducing SI issue to unallowable levels. SI is determined in terms of any deviation from the ideal waveform at the ends of the receiver [2]. This becomes a issue for better result digital circuits, when capacitance and inductance effects are also applied and a rebound to the ground significantly reduces the presentation of digital circuits [3]. The capacitive and inductive coupling causes are the main problem among two adjacent cables in UDSM and DSM technologies, since the distance among the two cables is too tiny. [4].

This associated capacitance and inductance cause near-end interference adjacent the transmitter end and far-end interference at the end of the receiver on the victim's line when the source is smeared to the attacker's line. FECN noise is associated to the variance between inductive and capacitive currents. The NECN noise refers to the amount of the capacitive and inductively coupled currents. The communication effect can be a short-range outcome that only exists among two nearby signal lines [5]. Due to the capacitive and inductive coupling, MOS drivers and thus conductive elements in addition to the first signal source are sensitive to coupling effects [6]. There are two ways to reduce the

## Power and Area Constrained Crosstalk Elimination Circuit for High-Speed VLSI Interconnects

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### ABSTRACT

Crosstalk is one of the major issues in the VLSI interconnects. Crosstalk reduces the performance of the operation while doing the switching operation. The degree of distortion is more when the frequency of the switching is more. Crosstalk can be eliminated by doing the encoding process before connecting the data into the bus line. In this work, an optimized logic is designed to perform the crosstalk elimination problem. Area and power-constrained designs are performed to reduce the hardware resource utilization and complexity. By using the proposed design, the power and area reduced when compared to the conventional design. The design is developed using 180nm and 45nm technology to evaluate the performance. By using the proposed design, 1679248nW power and 68 cell which is less when compared to the conventional design.

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## A Survey on Comparative Study of Classification Techniques in Machine Learning

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### ABSTRACT

In today's world of information, tons of data exist for everyone. The processing power and storage power has increased dramatically in last decade and now we have capacity to store this large amount of data. The motivation behind storage and processing of this data is to produce knowledge from them. Classification algorithms are widely used to extract knowledge from available data. This paper focuses primarily on some most frequently used classification techniques in Machine Learning. In this paper most popular classification techniques like Decision Tree, K-Nearest Neighbor, and Support Vector Machine are discussed, and compared on the basis of their performance.

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## Impact of Low Latitude Ionosphere Irregularities on GPS+NavIC (Combined) Position Error During Solar Flares

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### ABSTRACT

Global Navigation Satellite Systems (GPS, GLONASS, Galileo, BDS and NavIC) position, navigation and time (PNT) services in low latitudes are being affected significantly by the ionosphere and the impact varies with changes in space weather. Total Electron Content (TEC) and Rate of TEC Index (ROTI) are the parameters universally used to measure ionosphere dynamics. The aim of this paper is to study the variations of TEC, ROTI and GPS+NavIC (Navigation with Indian Constellation) position error during solar flares (one of the space weather events); using data collected from NavIC receiver station at Kurnool (15.79<sup>0</sup>N, 78.07<sup>0</sup>E), India, for the period of 4-12 September, 2017. Infact, the correlation between ROTI and GNSS based positioning error has been observed in many studies, evidences of such research suggesting that there is a possibility for correlation behaviour alteration during adverse space weather conditions. Hence, the correlation between ROTI and GPS+NavIC position error is also investigated to findout the interesting facts about solar flares impact. Results from this study, show that the intense solar flares(X-class) precedes the geomagnetic storm that follows with in the next 48-hours, leading to an increase in the values of TEC and ROTI. The correlation between ROTI and error in position coordinates (latitude, longitude and height) is positive with maximum correlation coefficient of 0.86.

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## A Survey of Various Algorithms for Face Detection and Recognition

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### ABSTRACT

In the last few decades, the importance of face recognition systems has been increased rapidly. Face Recognition technology developed in the 80's and it has rapidly developed, especially in the 90's. Face recognition is a widely used biological recognition technology. One of the key challenges of face recognition is finding efficient and discriminative facial appearance descriptors that can counteract large variations in illumination pose, facial expression, ageing, partial occlusions and other changes. In comparison with other identification methods, face recognition has more convenient features. People can be fairly identified even in the very serious visual stimulated situation. Face recognition process can be implemented easily in security systems rather than other biometric systems such as fingerprint, signature, etc. Open CV's face detector uses a method for face detection. This paper states different algorithms like Haar cascade, Viola-Jones, Principal Component Analysis (PCA), K-Nearest Neighbour (KNN).

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## Investigation of Carrier- to- Noise ratio impact on GDOP in Multi-GNSS Environment

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### ABSTRACT

Position accuracy is influenced mainly by geometry of satellite called Geometric Dilution of precision (GDOP) and error measurement. The carrier to noise ratio (C/N) has prime influence on the error measurements. A better accuracy can be achieved in positioning of a GNSS based device if GDOP is computed using C/N. In the previous studies, it has been observed GDOP has been reduced to maximum extent in multi constellation case compared to single constellation. In this paper, GDOP computation is performed considering C/N of all visible satellites, apart their Elevation, Azimuth angles. The weighted GDOP (WGDOP) has been computed using the C/N in various cases of constellations. And further it can be used in satellite selection algorithms. It has been observed that GDOP and WGDOP in multi constellation is 1.34 and 0.1959 respectively, which clearly pictures that the WGDOP helps to improve the accuracy.

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# CMOS Implementation of Comparators for ADCs

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**Abstract.** Recent advances as well as new innovations in IC technology and circuit design techniques have lead to design systems that can entirely replace complex analog signal with digital Dynamic comparators are reasonable for ADCs with superior because of low power utilization and quick speed. Be that as it may, when CMOS technology forms into a profound submicron to improve the comparator's speed and power utilization, the kick-back noise and offset are fundamentally more awful and influence the comparator's execution. To make the comparator increasingly accurate, the technique for decreasing kick-back noise and aligning the offset voltage ought to be included. Another dynamic comparator was proposed to diminish the kickback noise and align the offset voltage. In this work, both the existing Comparator Architectures and Proposed Comparator Architectures are designed and simulated in Mentor Graphics Design Tools with 130 nm Technology.

**Keywords:** CMOS technology · Kickback noise · Offset · Power consumption · Comparator

## 1 Introduction

The motivation for the detailed investigation of Nanometer CMOS Comparators is described in this introduction. In addition, various types of comparators are introduced shortly to address them. In most cases, further technological progress is coupled with the growing demand for shorter-term handling of more operations. As a tendency, more functional blocks are implemented in the digital domain to facilitate and adapt with software more individually. Analog-to-digital converters (ADCs) translate analog signals into digital values that are discrete in time and amplitude at the link between the analog and the digital domain. The digital translation into the analog domain is done by digital to analog converters (DACs). A fast computation in the digital domain also forces, among other things, the need for fast ADCs. To save production costs and minimize the final product, several functional circuit blocks are combined into one chip and form a system on a chip (SoC). Digital and analog blocks with additional ADCs or

## Overview of the High Efficiency Video Coding (HEVC) Standard

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### ABSTRACT

High Efficiency Video Coding (HEVC) is currently being prepared as the newest video coding standard of the ITU-T Video Coding Experts Group and the ISO/IEC Moving Picture Experts Group. The main goal of the HEVC standardization effort is to enable significantly improved compression performance relative to existing standards—in the range of 50% bit-rate reduction for equal perceptual video quality. This paper provides an overview of the technical features and characteristics of the HEVC standard.

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# Fast Image Dehazing Method by Linear Transformation

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## Abstract :

Images captured in hazy or foggy conditions area unit seriously degraded because of the scattering of atmospherical particles within the air, that influence directly on the performance of out of doors laptop vision systems. during this paper, a fast rule algorithmic rule for single image dehazing is finished supported linear transformation by considering the linear relationship that exists in between the hazy and therefore the haze-free pictures within the minimum channel. First, the principle of linear transformation is analyzed. Consequently , the tactic of estimating a medium transmission map is detailed and additionally the weakening ways area unit introduced to resolve the matter of the brightest areas of distortion. To accurately estimate the atmospherical lightweight, an additional channel technique is planned supported quad-tree subdivision. during this technique, average grays and gradients within the region area unit used as assessment criteria. Finally, the haze-free image is obtained victimization the atmospherical scattering model. varied experimental results show that this algorithmic rule will clearly recover the

image, particularly if there area unit any changes at the sides of sharp changes within the field. therefore it can do an honest impact for single image dehazing.

**Keywords** – Dehazing , image restoration , quad-tree subdivision , linear transformation and transmission map.

## Introduction:

Accurate extraction of image features is a key factor that directly influences the performance of computer vision systems . However, in hazy or foggy weather conditions, image quality severely degrades due to light scattering by atmospheric particles, and many characteristics of the hazy image are covered. Therefore, improving image quality and enhancing system robustness in challenging weather conditions has important scientific significance and broad application values. Its research results can be widely used in urban transportation , outdoor video surveillance , driver assistance systems , and satellite remote sensing . In addition, they provide reference values for underwater image analysis and rainy and snowy image processing fields.

**Dehazing :**

We see objects from the light reflected off them. But that's not all we see. Some of this light will get absorbed or scattered by the air that it is passing through. In addition, ambient light will bounce off these air particles and be reflected back to your camera. Most of the time this is not a big problem. However, if the air is full of additional particles such as water droplets (fog) or soot particles (smog), then visibility will decrease. This occurs because the haze stops the light from the original object, and replaces it with additional reflected light. Therefore it is necessary to dehaze the image.

**Dehazing a photo requires a couple of steps:**

1. Figure out how hazy each pixel is.
2. Figure out the colour of the light reflected by haze.
3. Remove the haze colour from each pixel in proportion to how hazy that pixel is. Light reflected due to haze has a particular colour: the colour of the ambient light that is reflecting. This colour should be fairly constant over the whole picture, so if we can calculate it, we can just remove that constant value from every pixel.

**Image Dehazing :**

Haze (or fog, mist, and other atmospheric phenomena) is a main degradation of outdoor images, weakening both colors and contrasts. Dehazing is a method that removes haze on the image. In almost every practical scenario the light reflected from a surface is scattered in the atmosphere before it reaches the camera. This is due to the presence of aerosols such as dust, mist, and fumes which deflect light from its original course of propagation. In long

distance photography or foggy scenes, this process has a substantial effect on the image in which contrasts are reduced and surface colors become faint. Such degraded photographs often lack visual vividness and appeal, and moreover, they offer a poor visibility of the scene contents. This effect may be an annoyance to amateur, commercial, and artistic photographers as well as undermine the quality of underwater and aerial photography. This may also be the case for satellite imaging which is used for many purposes including cartography and web mapping, land-use planning, archeology, and environmental studies.



Fig.1. Image before dehazing

Fig.1.2. Image after dehazing

There are various methods for dehazing the images. But one of the fastest and efficient methods is based on linear transformation. One of such methods is dehazing using the dark channel.

## Existed Method

### IMAGE HAZE REMOVAL USING DARK CHANNEL PRIOR :

The dark channel is based on the statistics of haze-free outdoor images. We find that, in most of the local regions which do not cover the sky, it is very often that some pixels (called "dark pixels") have very low intensity in at least one color (rgb) channel... Therefore, these dark pixels can directly provide accurate estimation of the haze's transmission.

To calculate the dark channel, we take every pixel in the image and look at the region surrounding it (i.e. a square of 15×15 pixels centred on the pixel of interest).

We calculate the minimum intensity colour at each pixel in the square, and then we find which of these is the lowest in the whole square. This is the dark channel value for the original pixel. In other words we pick the lowest colour value of all the colours in all the surrounding pixels. You will note that we have gone from a colour photo composed of three colour channels to an image with just one channel. This will be a black-and-white (technically "greyscale") image.

The low intensity within the dark channel is principally because of 3 factors:

a) shadows, e.g., the shadows of cars, buildings, and therefore the inside windows in cityscape pictures, or the shadows of leaves, trees, and rocks in landscape images;

b) colourful objects or surfaces, e.g., any object with low reflection factor in any color channel (for example, inexperienced grass/tree/plant, red or yellow flower/leaf, and blue water surface) can end in low values within the dark channel;

c) dark objects or surfaces, e.g., dark tree trunks and stones. because the natural out of doors pictures square measure typically colourful and jam-packed with shadows, the dark channels of those pictures square measure very dark.

Although the above dehazing method can achieve good results on a single image, the high computation limits their applications in real-time systems .

## PROPOSED METHOD

### ATMOSPHERIC SCATTERING MODEL :

According to the atmospheric scattering theory, the scattering of atmospheric particles is mainly divided into two parts: one is the attenuation process of reflected light from the object surface to the camera; the other is the scattering of airlight reaching the camera. A schematic diagram of the atmospheric scattering model is shown in Fig.2.1

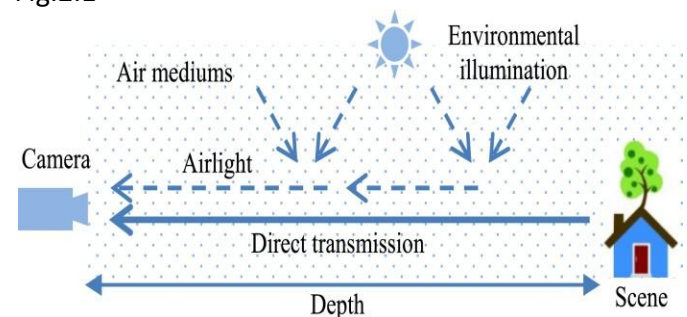


Fig.2.1. Atmospheric scattering model  
The solid line denotes light from the object to the camera; the dotted line represents airlight. In computer vision and computer graphics, the scattering model of a hazy image can be expressed as

$$E(d, \lambda) = E_0(\lambda)e^{-\beta(\lambda)d} + E_\infty(\lambda)(1 - e^{-\beta(\lambda)d}) \quad (\text{eq 1})$$

where  $\lambda$  is the wavelength of visible light,  $d$  is the distance from scene to camera,  $\beta(\lambda)$  is the atmospheric scattering coefficient, and  $E_0(\lambda)$  and

$E_{\infty}(\lambda)$  are the radiation intensity at  $x = 0$  and  $x = \infty$ , respectively.

This kind of dehazing method serves to remove the effect of atmospheric light in order to restore the details of the image and color information. Let  $I(x) = E(d, \lambda)$ ,  $J(x) = E_0(\lambda)$ ,  $t(x) = e^{-\beta(\lambda)d}$ ,  $A = E_{\infty}(\lambda)$ , eq 1 can be simplified to

$$I(x) = J(x)t(x) + A(1 - t(x)) \quad (\text{eq 2})$$

Where  $x$  is the coordinates,  $I(x)$  is hazy image,  $J(x)$  is the haze-free image,  $A$  is the atmospheric light, and  $t(x)$  is the medium transmission map. As shown by (2), the main difficulty in solving single image dehazing is the double unknowns of the haze-free image  $J(x)$ , and the transmission map  $t(x)$ , which is severely ill-posed. However, if the depth information of an image is known or if we have some prior knowledge for the single image, then  $J(x)$  can still be resolved.

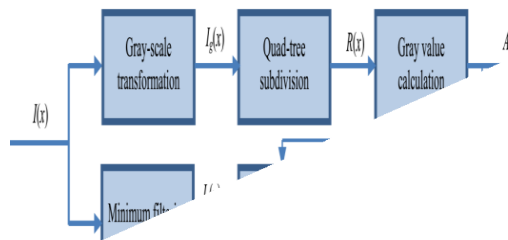


Fig.2.2. Block diagram of proposed method

## DEHAZING METHOD BASED ON LINEAR TRANSFORMATION :

The flow chart of the proposed method is shown in Fig.4.2 , which is divided into three steps according to the atmospheric scattering model. 1) Atmospheric light estimation is performed through grayscale transformation to find  $I_g(x)$ . Then, the quadtree subdivision is adopted to obtain the sky region,  $R(x)$ , and finally, the

atmospheric light  $A$  is obtained by calculating the average gray of the sky region. 2) A transmission map is estimated by calculating the minimum color channel of  $I(x)$  to obtain  $I_c(x)$ . Then, the linear transformation algorithm is used to estimate the rough transmission map,  $t_r(x)$ , and finally, the Gaussian blur method is used to refine the rough transmittance function to obtain  $t(x)$ . 3) Image restoration with parameters  $t(x)$  and  $A$  is used to recover the haze-free image based on the atmospheric scattering model.

### 1. Transmission Map Estimation:

#### 1) Linear Transformation:

The effect of atmospheric light on imaging increases as the distance from the scene to the observation point increases, and from the visual effect, the brightness of the image is gradually increased as the fog thickens. To estimate the medium transmission map, eq 2 can be transformed into

$$t(x) = \frac{A - I(x)}{A - J(x)} \quad (\text{eq 3})$$

In color images, since at least one reflection coefficient of the color component is very small, the numerator and denominator were calculated for three color channels with minimum filter, giving

$$t(x) = \frac{(\min_{c \in \{r, g, b\}} A_c - \min_{c \in \{r, g, b\}} I_c(x))}{(\min_{c \in \{r, g, b\}} A_c - \min_{c \in \{r, g, b\}} J_c(x))} \quad (\text{eq4})$$

where  $c$  is the color channel of the hazy image,  $c \in \{r, g, b\}$ ,  $I_c(x)$  is the  $c$  channel value at pixel  $x$  of  $I$ . Suppose the atmospheric light  $A$  is the vector with the value  $\{A_0, A_0, A_0\}$ , then (eq 4) will change to

$$t(x) = (A_0 - \min_{c \in \{r,g,b\}} I_c(x)) / (A_0 - \min_{c \in \{r,g,b\}} J_c(x)) \quad (\text{eq5})$$

Because the transmission rate is related to the distance under hazy conditions, the larger imaging distance, the higher the pixel value on the image. Therefore, suppose in the imaging process, the minimum color component of the three channel increases linearly as the transmission rate increases, which is

$$\min_{c \in \{r,g,b\}} J_c(x) \propto \min_{c \in \{r,g,b\}} I_c(x) \quad (\text{eq 6})$$

Then, the above equation will be expressed as

$$\min_{c \in \{r,g,b\}} J_c(x) = a \times \min_{c \in \{r,g,b\}} I_c(x) + b \quad (\text{eq 7})$$

where a is that the slope and b is that the intercept. However, the addition of 2 unknown parameters makes the equation tougher. Therefore, it's altered so it's roughly expressed victimisation the piecewise region of a quadratic operate

$$\min_{c \in \{r,g,b\}} J_c(x) = ((\min_{c \in \{r,g,b\}} I_c(x) - \text{Min} / \text{Max} - \text{Min}) \times (\min_{c \in \{r,g,b\}} I_c(x))) \quad (\text{eq 8})$$

where scoop and Min square measure the utmost and minimum of  $\min_{c \in \{r,g,b\}} I_c(x)$ , severally.

$$\text{Thus, } 0 \leq \frac{\min_{c \in \{r,g,b\}} I_c(x) - \text{Min}}{\text{Max} - \text{Min}} \leq 1$$

Take  $i = \min_{c \in \{r,g,b\}} I_c(x)$  as the independent variable on the horizontal axis, and take

$j = \min_{c \in \{r,g,b\}} J_c(x)$  as the dependent variable on the vertical axis..

Therefore, in the range of [Min, Max], the linear relationship of the piecewise function in the red solid curve can be approximated by the green straight line in the graph. When  $i = \text{Min}$ , then  $j = 0$ ; when  $i = \text{Max}$ , then  $j = i$ .

A control factor,  $\delta$ , is introduced into the expression to constrain the speed of the linear change. Hence, (eq 8) is changed to

$$\min_{c \in \{r,g,b\}} J_c(x) = ((\delta \times \min_{c \in \{r,g,b\}} I_c(x) - \text{Min} / \text{Max} - \text{Min}) \times (\min_{c \in \{r,g,b\}} I_c(x))) \quad (\text{eq 9})$$

where  $0 \leq \delta \leq 1$ , the variation speed of  $\min_{c \in \{r,g,b\}} J_c(x)$  with  $\min_{c \in \{r,g,b\}} I_c(x)$  decreases. In summary, (eq 3) can be expressed as follows:

$$t(x) = (A_0 - \min_{c \in \{r,g,b\}} I_c(x)) / ((A_0 - \delta) \times ((\min_{c \in \{r,g,b\}} I_c(x) - \min(\min_{c \in \{r,g,b\}} I_c(x))) / (\max(\min_{c \in \{r,g,b\}} I_c(x)) - \min(\min_{c \in \{r,g,b\}} I_c(x))) \times (\min_{c \in \{r,g,b\}} I_c(x))))$$

## 2. Processing of the Brightest Region:

In (eq 9), the numerator is always greater than the denominator; therefore,  $t(x) \leq 1$ . If The common operation is  $\max(t(x), 0)$ ; that is, negative values are set as 0. However, this will lead to the over-processing of the brightest regions.

To avoid this situation, the absolute value calculation is used to obtain a positive value when the high brightness pixels are greater than the atmospheric light. The brightness value is higher than that of atmospheric light. Furthermore, the impact degree from the haze is smaller. Thus, the higher the transmission rate that can be set, the smaller the error. Where the red, green, blue, and black curves relate to different  $\delta$ . As  $\delta$  increases, in the region of



Max  $\geq$  min $c \in \{r, g, b\} | c(x) \geq A_0$ ,  $t(x)$  changes faster. When  $\delta=0.93$ , at the horizontal axis of min $c \in \{r, g, b\} | c(x) = \max$ , the output  $t(x)$  reaches 3.

## Atmospheric Light

### Estimation

Another key factor for solving (eq 10) is the estimation of the atmospheric light  $A_0$ , which is important in image dehazing. According to its own haze characteristics, a large amount of haze will increase the brightness of an object in an image.

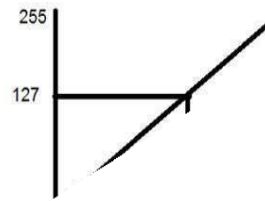
#### 1). Gray level transformation

There are three basic gray level transformation.

- Linear
- Logarithmic
- Power – law

#### Linear transformation :

First we'll look into the linear transformation. Linear transformation includes easy identity and negative transformation. Identity transformation has been mentioned in our tutorial of image transformation, however a quick description of this transformation has been given here. Identity transition is shown by a line. during this transition, every price of the input image is directly mapped to every different price of output image. That ends up in an equivalent input image and output image. And thus is named identity transformation. it's been shown below.



#### Logarithmic transformations:

index transformation any contains 2 style of transformation. Log transformation and inverse log transformation. The log transformations may be outlined by this formula

$$c \log(r + 1).$$

The inverse log remodel is opposite to log remodel.

#### Power – Law transformation

There area unit any 2 transformation is law of nature transformations, that embody ordinal power and ordinal root transformation. These transformations may be given by the expression:

$$s = cr^{\gamma}$$

#### 2) QUAD TREE SUBDIVISION

To improve the positioning accuracy and robustness, an additional channel method is proposed based on quad-tree subdivision; this method is based on the experience knowledge that the sky areas are mainly distributed in the middle or upper parts of images. First, the hazy color image is transformed to a gray image, and then, the image is divided into four parts  $x_{ni}$ ,  $i \in [1, 2, 3, 4]$  represents the regions of upper left, upper right, bottom left and bottom right, respectively. In addition,  $n$  is the level of subdivision, where  $n = 1$  represents the first subdivision on the source image. The average gray value of each region  $S(x_{ni})$  is defined as the score of this region  $x_{ni}$ , and the formula is expressed as

$$S(x_{ni}) = \text{mean}(I(x_{ni}))$$

(eq 13)

If the highest score region of the first subdivision is on the upper-half of the image, i.e.,  $\max(S(x_{11}) | S(x_{12})) \in [S(x_{11}) | S(x_{12})]$ , then this region will be the new area that is divided into four smaller blocks using the quad-tree method for the next iterative step. Equation (14) is used to iteratively calculate the score until the selected area is less than a predefined termination threshold.

There is an absolute termination condition in the above quadtree subdivision process; that is, if the difference between the maximum average gray value and the second highest average gray value is less than  $ST$ , then the region with the highest score will not be divided further without considering whether it reached the setting size. Assuming that in the  $n$ th level subdivision, the maximum score is  $S(x_{nk})$ , then the absolute termination rule is

$$\min |S(x_{nk}) - s_n(x_{nk})| \leq ST \quad (\text{eq 14})$$

where  $\min$  is the minimum operation and  $k$  is the remaining regions of region  $k$ . If the above procedure may generate two candidate regions of  $x_{final}$  and  $x'_{final}$ , then the two regions will be compared based on the ratio between the average gray and the average gradient of each region, which can be expressed as

$$s'(x_{ni}) = \text{meangray}(I(x_{ni})) / \text{meangradient}(I(x_{ni})) \quad (\text{eq 15})$$

where  $\text{meangray}$  is the average gray and  $\text{meangradient}$  is the average gradient. Compare the  $s'(x_{final})$  and  $s'(x'_{final})$  of two regions, and select the larger one as the final sky region. Finally, the top 10% brightest pixels in the final region were selected, and the average gray value will be used as the atmospheric light value  $A_0$ .

### Haze-Free Image Recovery :

According to the atmospheric scattering model, once the transmission map  $t(x)$  and atmospheric light  $A_0$  are obtained, the scene radiance can be recovered with the following formula transformed from (eq 2):

$$J(x) = I(x) - A_0 \max(t(x), t_0) + A_0 \quad (\text{eq 16})$$

where  $t_0$  is a lower bound used for restricting the transmission map, which is set to 0.05.

### APPLICATIONS:

1. **URBAN TRANSPORTATION:** Urban transportation is developing speedily, that results in that intelligent traffic is that the direction of future traffic.

2. **out of doors VIDEO SURVEILLANCE:** Haze is one amongst the foremost common region phenomena. In hazy weather, smoke, dirt and alternative dry particles obscure the clarity of the scenery objects severely degrading the standard of the out of doors pictures taken by camera. Therefore, rising the technique of image dehazing has vital and realistic significance

3. **DRIVER help SYSTEMS:** beneath traditional climate, captured image is fairly clear. Once the fog seems, thicker medium can degrade image quality to some extent, as an example, unsaturated colours and blurred texture. Therefore, the foggy image will increase the complexness of image recognition downside. Dehazing is a vital preprocessing technique in pc vision field.

**RESULTS :**

**Original Image:**

**original image**



Fig.3.1.Oiriginal image

**Gray scale transformation:**

**Gray-scale Transforma**



Fig.3.2.Gray scal Transformation

**Quad tree subdivision:**

**Quad-tree Subdivision.**



Fig.3.3.Quad tree subdivision

**Linear transformation:**

**Linear Transformation**



Fig.3.4.Linear transformation

**Final output :**

**final output**



Fig.3.6.Final output

**Transformation map :**

**transmission map**



Fig.3.5.Transformation map

**CONCLUSION :**

In this project, under the assumption that the smallest color channel of a hazy image has a linear relationship with that of its haze-free image, a simple and efficient method of transmission map estimation was proposed. The weakening strategy was designed to solve the problem of brightness distortion in some areas, and Gaussian blurring was adopted to refine the transmission map. Furthermore, to adapt to the position of the sky area and obtain the atmospheric light, an additional channel method was presented based on a quad-tree subdivision by using the ratio of average grays and gradients in the region for accurate estimation

In this method, the estimation of the transmission map is based on a linear model that includes only linear operations without any exponential operations

Therefore, for large image sizes or video from hazy conditions, it not only improve the dehazing effect but also guarantee the computing speed. The experimental results show that the method can avoid the phenomena of over saturation and halo

### Referance:

[1] J. Wang, W. Wang, R. Wang, and W. Gao, "CSPS: An adaptive pooling method for image classification," *IEEE Trans. Multimedia*, vol. 18, no. 6, pp. 1000–1010, Jun. 2016.

[2] S. C. Huang, B. H. Chen, and Y. J. Cheng, "An efficient visibility enhance-ment algorithm for road scenes captured by intelligent transportation sys-tems," *IEEE Trans. Intell. Transp. Syst.*, vol. 15, no. 5, pp. 2321–2332, May 2014.

[3] M. Saini, X. Wang, P. Atrey, and M. Kankanhalli, "Adaptive workload equalization in multi-camera surveillance systems," *IEEE Trans. Multi-media*, vol. 14, no. 3, pp. 555–562, Mar. 2012.

[4] X. Pan, F. Xie, Z. Jiang, and J. Yin, "Haze removal for a single remote sensing image based on deformed haze imaging model," *IEEE Signal Process. Lett.*, vol. 22, no. 10, pp. 1806–1810, Oct. 2015.

[5] M. Negru, S. Nedevschi, and R. I. Peter, "Exponential contrast restoration in fog conditions for driving assistance," *IEEE Trans. Intell. Transp. Syst.*, vol. 16, no. 4, pp. 2257–2268, Apr. 2015.

[6] J. Y. Chiang and Y. C. Chen, "Underwater image enhancement by

effects, and the restoration of details and color is very natural, which not only meet the visual requirements in subjective terms, but it has great advantages in the implementation efficiency.

wave-length compensation and dehazing," *IEEE Trans. Image Process.*, vol. 21, no. 4, pp. 1756–1769, Apr. 2012.

[7] T. K. Kim, J. K. Paik, and B. S. Kang, "Contrast enhancement system using spatially adaptive histogram equalization with temporal filtering," *IEEE Trans. Consum. Electron.*, vol. 44, no. 1, pp. 82–86, Feb. 1998.

[8] H. Xu, G. Zhai, X. Wu, and X. Yang, "Generalized equalization model for image enhancement," *IEEE Trans. Multimedia*, vol. 16, no. 1, pp. 68–82, Jan. 2014.

[9] T. J. Cooper and F. A. Baqai "Analysis and extensions of the frankle-mccann retinex algorithm," *J. Electron. Imag.*, vol. 13, no. 1, pp. 85–92, Jan. 2004.

[10] M. J. Seow and V. K. Asari, "Ratio rule and homomorphic filter for enhancement of digital colour image," *Neurocomputing*, vol. 69, no. 7, pp. 954–958, Jul. 2006.

# A Reconfigurable Stacked Microstrip Antenna Array for High Gain Applications

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**Abstract:** A reconfigurable stacked microstrip antenna array for high gain applications is proposed. In this paper the two microstrip antennas are arranged in the stacked form and in between the two antennas foam as been used as a substrate. In order to provide reconfigurability as the frequency of microstrip antenna changes by changing the height of the foam. In order to increase the gain the upper patch is designed by an array of four square parasitic patch elements are used and foam is used as a substrate in between the lower and upper patch and feed is given to the lower patch. As the height of foam is varied a high gain with frequency reconfigurability is obtained. The proposed antenna is designed and simulated using zeland IE3D electromagnetic wave simulator. The simulated results show that the antenna provides a gain of 14.5dBi at 5.93GHz lower frequency and 8.61dBi at 6.79GHz upper frequency. This type of antenna can be best suited for wireless applications.

**Keywords-** Reconfigurable antenna, stacked microstrip patch antenna, Antenna array.

## I. INTRODUCTION

In high-performance applications such as satellite, aircraft and spacecraft we have low cost, less weight, high performance and ease of installation are the main constraints. Presently there are many other government and commercial applications such satellite and wireless communications have the similar specifications. So to meet these required specifications the Microstrip antennas can be used. Microstrip antennas have very low profile, conformable to both planar and non planar surface, inexpensive and simple to manufacture using modern printed circuit technology.

Microstrip antennas are versatile in terms of polarization, resonant frequency, radiation pattern and impedance by adding the load between microstrip patch and ground plane such as pins and the adaptive elements.

In mobile communications, the antenna plays a critical role in transmitting and receiving signals from one terminal to another terminal. As the wireless devices become both smaller and more multifunctional, their antenna systems must do the same. Reconfigurable antenna offers an efficient solution to the multi functionality challenge. A single antenna can be reconfigured to operate at multiple bands can serve the function of multiple antennas.

Ideally reconfigurable antennas should be able to alter their operating frequency, impedance bandwidth, and polarization and radiation pattern to accommodate the changing operating requirements. So by making the antenna's reconfigurable, their behavior can adopt with changing

system requirements or environmental conditions and provide additional levels of functionality for any system.

A reconfigurable antenna [1-5] is an attractive feature in a modern wireless communication system because of its flexibility for use in multiple applications such as multiband and point-to-multipoint. Reconfigurable antenna systems were first introduced in 1998 by Brown [6]. In the reconfigurable antenna, the structure of the antenna can be changed by integrating appropriate switches, such as PIN diode switches [7], field-effect transistors (FET), piezoelectric transducers, or electromechanical system (MEMS) [8] switches into the design. Reconfigurable antennas can be grouped into three categories: frequency, polarization and radiation pattern reconfigurable antennas.

To overcome low gain and efficiency of MSA, a gain enhancement technique based on structural resonance has been proposed and discussed. This method involves the addition of a superstrate layer over substrate. The effect of multi layered substrate and superstrate thickness, dielectric material, and patch dimensions are discussed in. By properly selecting the thickness of the substrate and the superstrate layers, a very large gain can be realized. The resonance gain method has been studied using moment method.

In this paper we are going to design the antenna it is used to produce frequency reconfigurability along with high gain and the antenna is arranged in stacked form in order to get dual band reconfigurability.

In this paper we present a reconfigurable antenna with stacked structure can be used to increase the antenna bandwidth and gain with good return loss.

To get the dual band frequencies there is no need to change the antenna structure by simply changing the antenna dimensions like height of the dielectric or foam substrate we can achieve multiple frequencies.

In this paper a two layered stacked microstrip antenna is used. Two square patches are arranged in two different substrates with two different heights, dielectric constants and loss tangents. By changing the height of the second substrate the dual band operation that is frequency diversity can be achieved.

In this antenna the upper patch is designed by 2X2 antenna arrays in order to provide high gain dual band frequency reconfigurability.

## **Pollution Monitoring System Using LabVIEW**

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### **ABSTRACT**

The majority applications of pollution monitoring systems are in industries. The control of the parameters which causes pollution and deteriorates the industrial and natural environment pattern is a great challenge and has received interest from industries. The main objective of our project is to design an efficient and robust system to control the parameters causing pollution and to minimize the effect of these parameters without affecting the plant or natural environment. The proposed methodology is to model a system to monitor and control the pollution parameters and to inform pollution control authorities when any of these factors goes higher than industry standards. A mechanism using IoT and LabVIEW is introduced in this proposed methodology, which will automatically monitor when there is a disturbance affecting the system. The system is implemented using LabVIEW software. The system investigates level of CO released during industry process, temperature of the machineries , level of pH in industry effluents. Each process will have a separate data acquiring and controlling mechanism. LabVIEW provides operation interface and manipulation of data and IoT is suitable for interactive environment for signal transfer. The main idea behind the project is to make a real time fully automated control system using LabVIEW and IoT.

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## Survey on Corona Virus– A Review

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### ABSTRACT

Over the years, corona viruses (CoV) have posed a severe public health threat, causing an increase in mortality and morbidity rates throughout the world. The recent outbreak of a novel corona virus, named severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) caused the current Corona virus Disease 2019 (COVID-19) pandemic that affected more than 215 countries with over 23 million cases and 800,000 deaths as of today. The situation is critical, especially with the absence of specific medicines or vaccines; hence, efforts toward the development of anti-COVID-19 medicines are being intensively undertaken. One of the potential therapeutic targets of anti-COVID-19 drugs is the angiotensin-converting enzyme 2 (ACE2). ACE2 was identified as a key functional receptor for CoV associated with COVID-19. ACE2, which is located on the surface of the host cells, binds effectively to the spike protein of CoV, thus enabling the virus to infect the epithelial cells of the host. Previous studies showed that certain flavonoids exhibit angiotensin-converting enzyme inhibition activity, which plays a crucial role in the regulation of arterial blood pressure. Thus, it is being postulated that these flavonoids might also interact with ACE2. This postulation might be of interest because these compounds also show antiviral activity in vitro. This article summarizes the natural flavonoids with potential efficacy against COVID-19 through ACE2 receptor inhibition.

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## **Lung Cancer Detection-A Review**

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### ABSTRACT

The Lung Cancer is one of the most common causes of death in people. Early detection of this cancer will increase the survival rate. Usually, cancer detection is done manually by radiologists that had resulted in high rate of False Positive (FP) and False Negative (FN) test results. Currently Computed Tomography (CT) scan is used to scan the lungs, which is much efficient than X-ray. In this research paper, a Computer Aided Detection (CADe) system for detecting lung cancer is used. This proposed system uses various image processing techniques to detect the lung cancer and also to classify the stages of lung cancer. Thus the rates of human errors are reduced in this system. As the result, the rate of obtaining false positive and (FP) False Negative (FN) has reduced. In this system, MATLAB has been used to process the image. Region growing algorithm is used to segment the ROI (Region of Interest). The SVM (Support Vector Machine) classifier is used to detect lung cancer and to identify the stages of lung cancer for the segmented ROI region. This research paper will produce more accuracy when compared to other existing systems.

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## **Lung Cancer Detection-A Review**

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### ABSTRACT

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## Hands Gesture Recognition Using Aforge.Net

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### ABSTRACT

There are many motion detection systems where they are done by using the palms of hands, the full hand detection is not done till now, which found them quite useful and found a lot of programs of the code in many different areas. Those fields were including from video surveillance products to quite awesome programs, like laser gesture detection, comets tail detection, detecting birds which hums, and many other programs. In this project we are in advance with motion detection which is the traditional way of detection where the hand detection used. Let's suppose we have a camera, which monitors some areas. When anyone gets into the place and makes some hand gestures in front of the camera, the program should detect the type of gesture and raise an event, for example. When the hand's gesture recognition is detected, the program may perform different actions depending on the type of gesture.

**Keywords--** Aforge.net, Gesture Recognition, Histogram Statistics, Motion Detection, Object Extraction.

### INTRODUCTION

Any motion detection system performs motion detection as its first step and then does some interesting routines with the detected object - hands gesture recognition. Let's suppose we have a camera, which monitors some areas. When somebody gets into the area and makes some hand gestures in front of the camera, the program should detect the type of gesture and raise an event, for example. When the hand's gesture recognition is noticed by the camera. The program will try computing based on the gesture it will recognize. For example, the devices which work on the hand gesture recognize which makes the virtual reality is possible in these days. The type of hands gestures are now talking about this specify method, which is discussed in the article, may recognize up to "fifteen" gestures, which are a combination of

"four" different positions of "two" hands - the hand is not up, raised diagonally down, diagonally up or raised straight [1].

### SYSTEM OVERVIEW

Each step involved in the motion detection system are explained clearly and presented below:

- When we have two images, the background and the image with an object, we may use the Difference filter to get a different image
- On the difference image it is possible to see the absolute difference between two images whiter areas show the areas of higher difference and black areas show the areas of no difference.
- We'll receive a lot of other frames, where we may have many other different objects, which are far from being the human body. Such things could be anything moving across the area, or it even could be a bigger noise than the one we filtered out before. To get rid of some false objects.
- The idea of this program is quite simple we need to use the histogram analysis so that it's easy to process. Where it is not like Machine Learning, Neural Network where it can lead to complex and requires high computation power [2].

### HANDS GESTURE RECOGNITION

The of using the aforge.net is used so that we can easily obtain the histogram images using their filters where they have the best filters which are a key ingredient for our project so whereas other software like Open CV can be used in computation but not at the filtering the images where the combination of images at 60fps can form a video and we can exactly form a video processing using this technique Fig 1 [3].

#### First We use "difference filter"

The distinction channel takes two pictures (source and overlay pictures) of a similar size and pixel organization and produces a picture, where

## Survey on Corona Virus– A Review

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### ABSTRACT

Over the years, corona viruses (CoV) have posed a severe public health threat, causing an increase in mortality and morbidity rates throughout the world. The recent outbreak of a novel corona virus, named severe acute respiratory syndrome corona virus 2 (SARS-CoV-2) caused the current Corona virus Disease 2019 (COVID-19) pandemic that affected more than 215 countries with over 23 million cases and 800,000 deaths as of today. The situation is critical, especially with the absence of specific medicines or vaccines; hence, efforts toward the development of anti-COVID-19 medicines are being intensively undertaken. One of the potential therapeutic targets of anti-COVID-19 drugs is the angiotensin-converting enzyme 2 (ACE2). ACE2 was identified as a key functional receptor for CoV associated with COVID-19. ACE2, which is located on the surface of the host cells, binds effectively to the spike protein of CoV, thus enabling the virus to infect the epithelial cells of the host. Previous studies showed that certain flavonoids exhibit angiotensin-converting enzyme inhibition activity, which plays a crucial role in the regulation of arterial blood pressure. Thus, it is being postulated that these flavonoids might also interact with ACE2. This postulation might be of interest because these compounds also show antiviral activity in vitro. This article summarizes the natural flavonoids with potential efficacy against COVID-19 through ACE2 receptor inhibition.

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## A Review-Synthesis of Antenna Arrays using Optimization Algorithms By Reducing Side Lobe Levels

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### ABSTRACT

Antenna array design is one of the most imperative electromagnetic optimization problems of current interest. In the antenna arrays the side lobe level (SLL) is main problem which causes waste of energy. In this paper, different evolutionary algorithms are presented for reduction of side lobe levels of antenna arrays to save power and improve Quality of Service (QoS) by ensuing maximum radiation in desired direction. The algorithms are Genetic Algorithm (GA), Particle Swarm Optimization (PSO), Flower Pollination Algorithm (FPA), Dragonfly Algorithm (DA), Invasive Weed Optimization Algorithm (IWO), Enhanced Firefly Algorithm (EFA), Cuckoo Search Chicken Swarm Optimization (CSCSO), Artificial Bee Colony (ABC), Ant Colony Optimization (ACO), Cat Swarm Optimization (CSO), Whale Optimization Algorithm (WOA), Chicken Swarm Optimization (CSO).

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## Complex Frequency Block domain Analysis and Efficient Implementation for Computational Active Noise Control

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### ABSTRACT

This paper provides a detailed description of active noise reduction (ANC) algorithms for the frequency-domain filtered-x least mean-square (FDFxLMS). In the ANC system, the traditional FXLMS algorithm is offered inefficient performance where a large number of filter coefficients are used by the secondary path estimate and the adaptive controller. A filtered complex least mean square (FBFXCLMS) dependent frequency domain block has been approached to reduce the ANC system's computational complexity for higher control filter order coefficients and enhance the convergence performance. It has been implemented using the overlap-save technique based on convolution and correlation operations, which provides considerable computational savings over the time domain FxLMS algorithm for higher-order adaptive filters. The complex adaptive filter algorithm is guided inversely proportional to that bin's signal power, individual step size for each frequency bin. Systematic computer simulations are conducted to demonstrate the precision relative to the time domain FXLMS algorithm for the proposed frequency-domain block FXCLMS algorithm. The proposed method's results had provided fast convergence and stability performance compared to the time domain FxLMS algorithm.

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## Alzheimers Disease – A Review

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### ABSTRACT

Alzheimer's disease (AD) is the most common cause of dementia in older adults and an important public health problem. The purpose of this review article is to provide a brief introduction to AD and the related concept of mild cognitive impairment (MCI). The article emphasizes clinical and neurobiological aspects of AD and MCI that medical students should be familiar with. In addition, the article describes advances in the use of biomarkers for diagnosis of AD and highlights ongoing efforts to develop novel therapies. In this review, current understanding of the epidemiology, genetics, pathology and pathogenesis of Alzheimer's disease is outlined, before its clinical presentation and current treatment strategies are discussed. Finally, the review discusses how our enhanced understanding of Alzheimer pathogenesis, including the recognition of a protracted preclinical phase, is informing new therapeutic strategies with the aim of moving from treatment to prevention.

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## A Survey of Various Algorithms for Face Detection and Recognition

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### ABSTRACT

In the last few decades, the importance of face recognition systems has been increased rapidly. Face Recognition technology developed in the 80's and it has rapidly developed, especially in the 90's. Face recognition is a widely used biological recognition technology. One of the key challenges of face recognition is finding efficient and discriminative facial appearance descriptors that can counteract large variations in illumination pose, facial expression, ageing, partial occlusions and other changes. In comparison with other identification methods, face recognition has more convenient features. People can be fairly identified even in the very serious visual stimulated situation. Face recognition process can be implemented easily in security systems rather than other biometric systems such as fingerprint, signature, etc. Open CV's face detector uses a method for face detection. This paper states different algorithms like Haar cascade, Viola-Jones, Principal Component Analysis (PCA), K-Nearest Neighbour (KNN).

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## Estimation and Correction of Carrier Frequency Offset to Improve the Performance of OFDM Systems

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### ABSTRACT

Orthogonal frequency division multiplexing (OFDM) is a special case of multicarrier transmission which transmits a stream of data over a number of lower data rate subcarriers. OFDM splits the total transmission bandwidth into a number of orthogonal and non-overlapping subcarriers and transmit the collection of bits called symbols in parallel using these subcarriers. This paper gives a total insight of various Peak -to Average Power Reduction (PAPR) techniques and principles of OFDM systems used in wireless communications. The research paper places a focus also on OFDM behaviors and techniques like Carrier Frequency Offset (CFO) estimation that improves performance of OFDM for wireless communications. Finally, the paper provides a number of wireless communication standards and many of the applications where OFDM systems are used.

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## **DT-CWTFusion on Region of Interest (ROI) for Distorted Video**

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### **ABSTRACT**

Restoring a scene distorted by atmospheric turbulence is a challenging problem in video surveillance. Image registration enables the geometrical alignment of two images and is widely used in various applications in the fields of remote sensing, medical imaging and computer vision. In this paper, we propose a novel method for mitigating the effects of atmospheric distortion on observed images. Region of interest (ROI) for each frame is taken, in order to extract accurate detail about objects behind the distorting layer. A simple and efficient frame selection method is proposed to select informative ROIs, only from good quality frames. Each ROI should be registered in order to reduce the distortion. The space varying problem can be solved by image fusion using complex wavelet transform. Finally contrast enhancement is applied.

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## Google Assistant Controlled Home Automation

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### ABSTRACT

The main objective of this project is to develop a home automation system using NodeMCU and Google Assistant. We saw many expensive home automation technologies such as Amazon Echo, Google Alexa and Apple Home Kit. So we made our own home automated to reduce the cost as much as possible. The system is implemented using ordinary household appliances and voice commands are given to the Google Assistant and with the help of IFTTT application and the Blynk application the commands are decoded and then sent to the microcontroller, then the microcontroller controls the relays connected to it as required, turning the device connected to the respective relay On or OFF as per the users request to the Google Assistant. The microcontroller used is NodeMCU (ESP8266) and the communication between the microcontroller and the application is established via Wi-Fi.

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## Intelligent Traffic Control System for Smart Ambulance using LabVIEW

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### ABSTRACT

The main objective of this system is to make it possible for the ambulance to reach a particular location without having it to stop anywhere until the destination is reached. This paper proposes monitoring of traffic lights and its controlling by the driver of the ambulance. Basic information of the patient is taken along with the status of the patient such as critical or non-critical. This information is further used to send it to the hospital. Depending upon the emergency, the driver sends the direction towards which it wants to travel. Depending upon the command, that particular signal is made green to provide way to the ambulance and simultaneously the others are changed to red. Using this method, way is provided to the ambulance resulting it to reach the destination in minimum time.

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