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For Year 2021				
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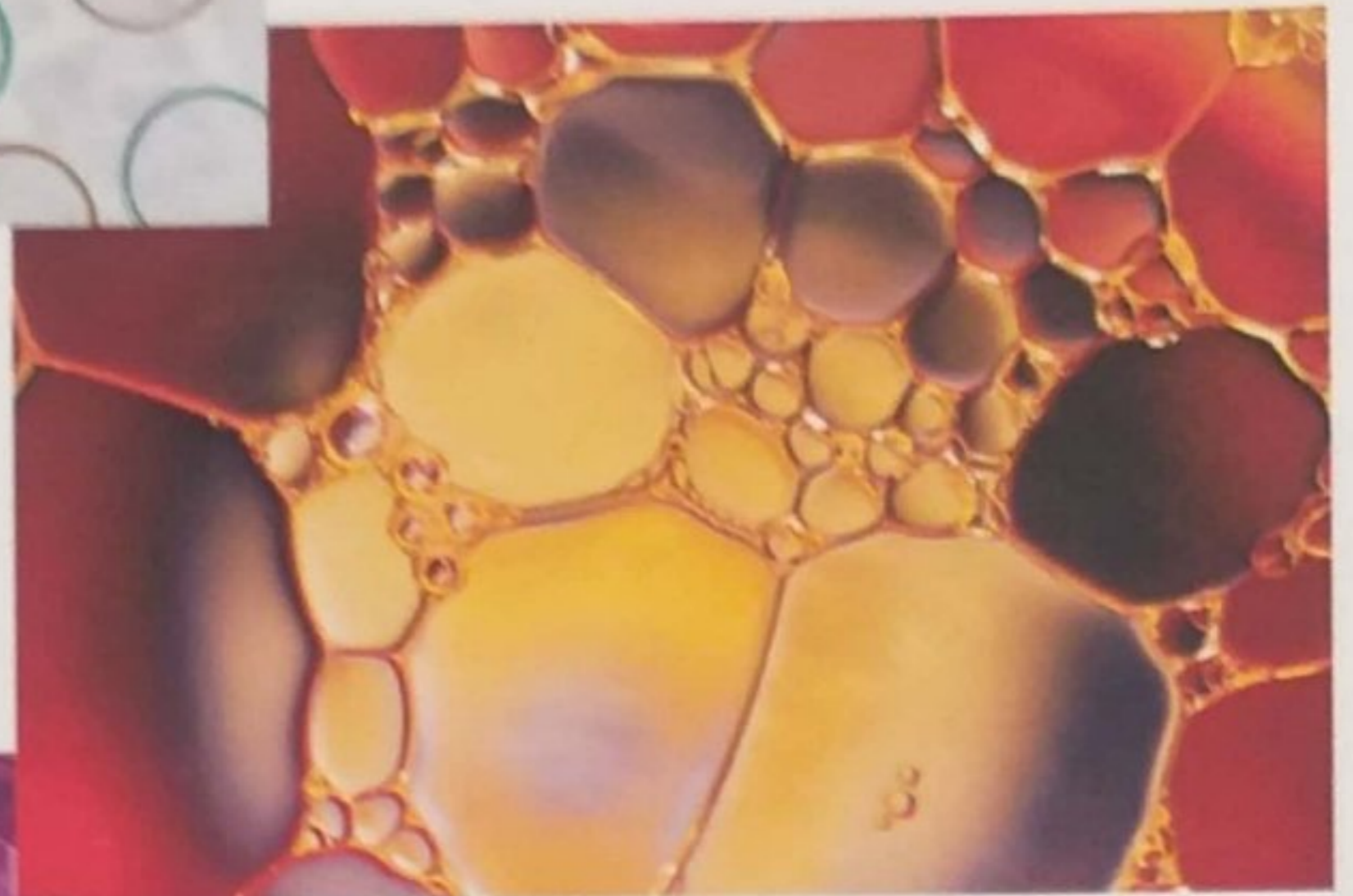
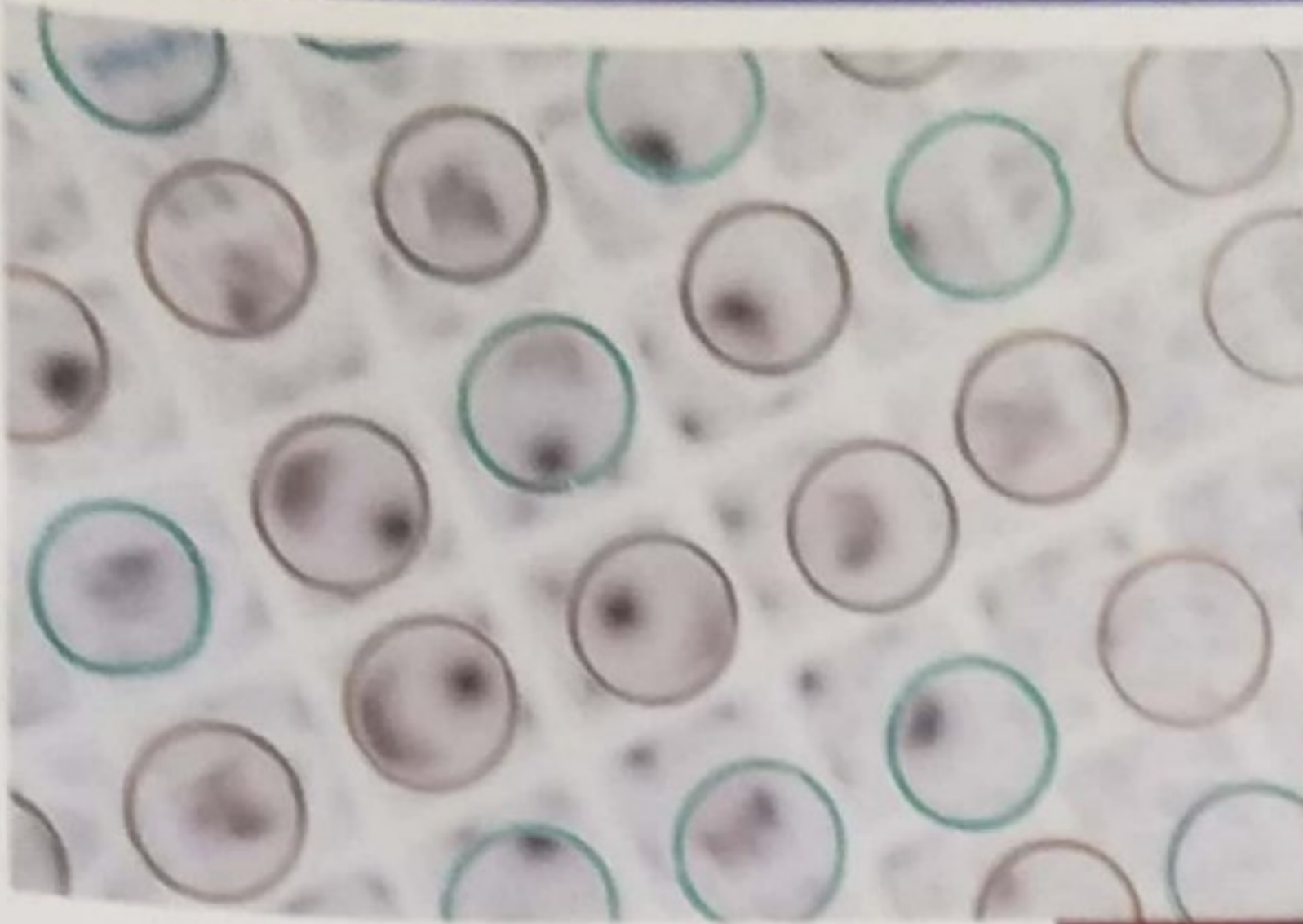
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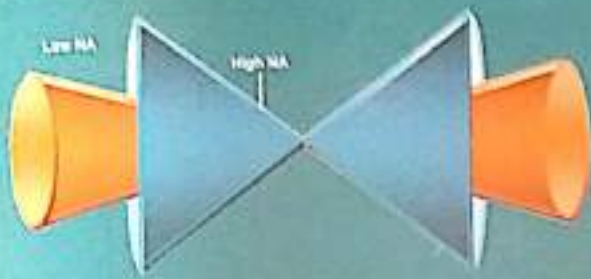
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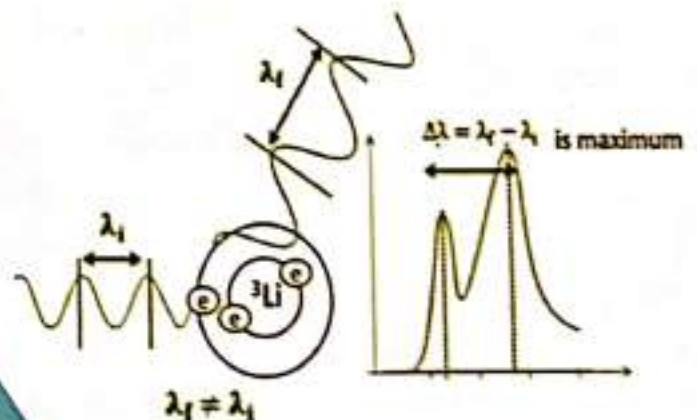
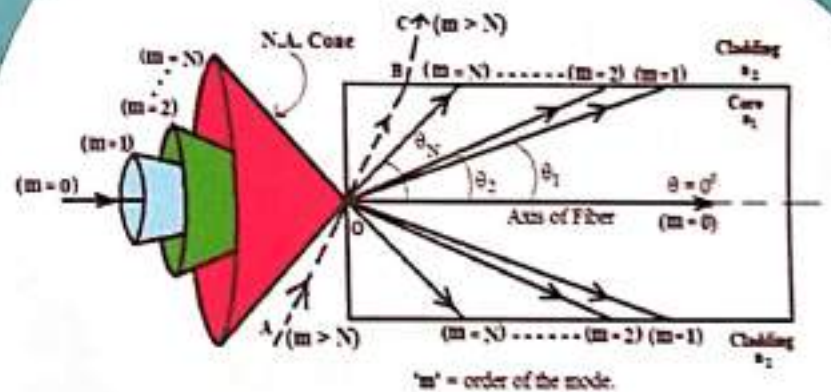
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Natural Product Developments



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CHAPTER 9

Recent Advancements of Curcumin Analogs and Curcumin Formulations in Context to Modern Pharmacotherapeutics Perspectives

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ABSTRACT

For thousands of years in traditional medicines, excellent sources of pharmaceutical active ingredients are medicinal plants for the development of new drugs. Turmeric having the scientific name *Curcuma longa* belongs to the Zingiberaceae family which grows in the tropical and subtropical regions. A number of phytochemicals including curcumin, demethoxycurcumin, and bisdemethoxycurcumin are present in the roots of turmeric. The polyphenolic crystalline yellowish–orange colored curcumin is the active ingredient in the herbal remedy. In China and India, the use of turmeric in traditional medicines is very common till today. The use of curcumin from turmeric as a folk remedy continues today. This chapter

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EXISTENCE OF $Z = \frac{1}{\sqrt{2}}(y+z)$ -TYPE PLANE GRAVITATIONAL WAVES IN BIMETRIC RELATIVITY

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ABSTRACT

In this paper, $Z = \frac{1}{\sqrt{2}}(y+z)$ - type plane gravitational wave is studied with source Cosmic Cloud Strings in Rosen's Bimetric theory of relativity. It is shown that there is nil contribution of Cosmic Cloud String in this theory. Only vacuum model can be constructed.

Keywords: Plane gravitational waves, Cosmic cloud strings, Bimetric Relativity.

AMS Code-83C05 (General relativity)

Introduction

The general theory of relativity is one of the most beautiful structures in all theoretical physics. In an attempt to get rid of the singularities, appear in the Einstein's General Theory of Relativity (GR), Rosen[8-9] has proposed a modified theory of gravitation within the framework of general relativity, which is called Bimetric Theory of Relativity (BR). In this theory, he has proposed a new formulation of the general relativity by introducing a background Euclidean metric tensor γ_{ij} in addition to the usual Riemannian metric tensor g_{ij} at each point of the four dimensional space-time. With the flat background metric, γ_{ij} the physical content of the theory is the same as that of the general relativity.

Thus, now the corresponding two line elements in a coordinate system x^i are –

$$ds^2 = g_{ij} dx^i dx^j \quad (1.1)$$

$$d\sigma^2 = \gamma_{ij} dx^i dx^j \quad (1.2)$$

Where ds is the interval between two neighboring events as measured by means of a clock and a measuring rod. The interval $d\sigma$ is an abstract or geometrical quantity not

directly measurable. One can regard it as describing the geometry that would exist if no matter were present. H. Takeno [5] propounded a rigorous discussion of plane gravitational waves, defined various terms by formulating a meaningful mathematical version and obtained numerous results.

Using definition of plane wave, we will use here, $Z = \frac{1}{\sqrt{2}}(y+z)$ type plane gravitational waves by using the line elements,

$$ds^2 = -A(dx^2 + dy^2) - C(dz^2 - dt^2) \quad (1.3)$$

The theory of plane gravitational waves have been studied by many investigators, H Takeno [6]; S. N. Pandey [15]; I. Goldman [7]; R.H. Gowdy [11]; H. Bondi, et.al. [4]; C.G. Torre [2]; P. A. Hogan [10]; Deo and Ronghe [1]; Deo and Suple [12],[13],[14] and they obtained the solutions.

In continuation of this, we will study $Z = \frac{1}{\sqrt{2}}(y+z)$ type plane gravitational wave with Cosmic cloud string and will observe the result in the context of Bimetric Theory of Relativity.



Investigation of the Issues in the Inter Linking of Rivers: A Case Study for Godavari-Krishna Link Indira Sagar Polavaram Project

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Abstract

Government is working and surviving on the basic principle of Interlinking of People in the form of collecting tax from people in order to provide products, facilities and services to the peoples and thereby to create Synchronous and Harmonious living environment with the characteristics of Concrete Society rather than Aggregate Society. Accordingly in the name of Interlinking of Rivers, collecting water from some Rivers and transferring water to other rivers becomes the basic Characteristics of a Government in order to create a Balance between Flood and Drought across the Time and Space domains of the nation and thereby to convert the existing Aggregate Basins into a Concrete Basin having high Resilience to the impact of Climate Change and that of Population Growth. Anyhow the observation in the last two decades shows the existence of a lot of Issues in the form of Criticism and Resistance against the implementation of National River Linking Projects (NRLP) of India designed based on the principle of Inter Basin Water Transfer (IBWT). This Review paper focuses on the investigation of various such Specific Issues including that of flora and fauna existing over one of the Peninsular Components of the NRLP of India named as Godavari-Krishna Link Indira Sagar Polavaram Project having the Idea Conceived since the year 1941, during the British Colonial Period. In addition various General Issues existing over the Interlinking of Rivers using NRLP of India have also been presented. Various quantitative Benefits including Irrigation Command Area benefits of this Indira Sagar Polavaram Link Project motivating towards successful implementation have also been explored. The Technical Characteristics such as Hydraulic and Hydrologic Characteristics including Flood handling capacity of this Link Project have been analyzed. The Flood Submergence Characteristics of the Godavari River with and without this link Project have been compared for both the cases of Upstream and Downstream sides of the Polavaram Dam.

Keywords: Concrete Basin versus Aggregate Basins; NRLP of India; Issues and Benefits of IBWT; Hydraulic & Hydrologic Characteristics; Godavari-Krishna Link Indira Sagar Polavaram Project;

1. Introduction

According to the basic Theory of Fluid Mechanics, by the Characteristics of Potential Distribution Function (Φ), the Flux flow per unit area (u) in x direction is given by the formula ($\partial\Phi/\partial x = -u$) while the direction of Flux flow is towards the direction of decrease in Potential. The Flux flow distribution function (Ψ) also called as Stream Function is completely characterized by Φ function (Streeter, 1958). Assuming the Potential Quantity (Φ) as the Authority exercised by an entity X , the Flow Quantity (Ψ) becomes the Responsibility placed over the entity X . Based on many Management Theories, the Authorities and Responsibilities are represented as two sides of same Coin because one cannot exist without the other (DuBrin, 2009). Accordingly the Flux Flow from points of high potential towards the points of low potential can be assumed as a natural process. Hence the Diversion of water from the Surplus River Basin having high Per Capita Water Availability (Φ) towards Deficit River Basin having Low Per Capita Water Availability using a set of IBWT (Ψ) based National River Linking Projects (NRLP) of India, becomes the natural Process of Water Resources Management to Balance the Flood and Drought in Space and Time Domain across any Geographical Region of India. The interlinking of Economy in the name Globalization Policy facilitates the Flow of Products and Services across the Boundary of a Country from the Source of High Availability towards the Destination Point of Demand across the World. The Figure 1 shows the positive impact of interlinked Economy or Globalization policy implemented by China and India from 1978 and 1991 respectively.

BIOGENIC SUSTAINABLE NANOTECHNOLOGY

Trends and Progress

Edited by
Raghvendra Pratap Singh
Alok R. Rai
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Highlights of decade long progress of nano-selenium fabricated from plant biomass: insights into techniques and mechanisms

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9.1 Introduction

Nanomaterials [nanoparticles (NPs)] are tiny particles that range in size from 1 to 100 nm in diameter. The physical, chemical, and biological characteristics of materials are altered as they are reduced to a nanometer scale (10^{-9} m), leading to new uses (Sana et al., 2020). One of the most important recent technical advancements is nanotechnology's use in food packaging. It enhances the functionality of food packaging in ways that traditional packaging cannot. It also protects the quality of food while extending the shelf life of food during transit

and storage. Some NPs provide health advantages in addition to improving food safety and quality. Nanomaterials might also operate as carriers for active ingredients like biocides and antioxidants. Such characteristics are in accord with the food industry's current aspirations for innovative, cost-effective, biodegradable, and environment-friendly packaging materials (Bumbudsanpharoke & Ko, 2015). Consumer desire for safe and high-quality food items with a long shelf life has prompted the development of active packaging. It differs from other forms of food packaging in that it allows interaction among a food product, its packaging, and the food ecosystem, ensuring food safety and quality. Active packaging allows for the intentional release or absorption of chemicals toward or away from the packed food and its habitat (Singh et al., 2016). Nanomaterials may be included in the matrix of food packaging or applied to the surface in general. To ensure food quality and safety, other approaches include putting nanomaterials among different layers. Nanomaterial's absorption into biopolymers as a technique of food preservation is a promising breakthrough (Peighambaroust et al., 2019).

Because of their powerful biocidal capabilities, metal NPs are typically employed in active packaging. Because of their exceptional biocidal effects, ability to protect cells from free radicals, minimal toxicological effects, increased biological action, and satisfactory bioavailability in comparison to other sources of selenium element, selenium nanoparticles (SeNPs) are among NPs that have potential application as a biocide in biopolymers. Physicochemical approaches have previously been used to make SeNPs. These procedures, however, need the use of acidic pH, high temperatures, and powerful chemicals, resulting in NPs that are unsuitable for food packing. Green synthesis approaches, including the use of microorganisms or plant extracts, as an alternative, seems to be gaining popularity in recent years (Sana et al., 2021). Biological approaches are believed to be safe, simple, and cost-effective, and they create NPs that are chemical-free (De Moura et al., 2012; Jagadish et al., 2018).

In active food packaging, SeNPs have been used in a few trials as an antibacterial and antioxidant agent. SeNPs inserted into a multilayer film comprising an exterior layer of polyethylene terephthalate (PET) and an interior layer of low-density polyethylene (LDPE) were shown to have antioxidant action by a group of researchers (LDPE). The thickness of the film was discovered to have a significant impact on its antioxidant capability. The easier the free radicals diffused into the packing film were effectively scavenged, the thinner the film was. The antioxidant effects of SeNPs embedded into laminates were later effectively proved on actual food samples by inventors. Due to a confidentiality agreement with the supplier, the laminates' recipe was not revealed. SeNPs absorbed in gelatin and furcellaran composite films and furcellaran alone packaging have also shown to have biocidal effects. In these investigations, however, physicochemical procedures were used to synthesize the SeNPs. Because the use of NPs in food packaging is still relatively new, data on SeNPs migration from food packaging into food is sparse. Using hazelnuts wrapped in SeNPs-based LDPE multilayer packaging, researchers explored SeNP migration. According to their findings, SeNPs from packaging did not migrate much into meals. Despite this, additional research on SeNP migration in different packaging materials is required. Such research will give scientific proof of the possible dangers of NP migration into food. It is also worth noting that

BIOGENIC SUSTAINABLE NANOTECHNOLOGY

Trends and Progress

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Micro & Nano Technologies Series

Phytofabrication of nickel-based nanoparticles: focus on environmental benign technology and therapeutic perspectives

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2.1 Introduction

Nowadays numerous metal-based nanoparticles (NPs) proposes greater attention towards photocatalytic, antibacterial, and anticancer, pathogenic microorganisms, and malignance cell lines.

NPs are extensively expanded because of their promising characteristics; besides emerging field of research, they are organized simple plus non-toxic. For instance, nickel oxide (NiO) NPs have widespread uses that were investigated in different fields of science

including agriculture, pharmaceutical industry, and biomedical environment (Chen et al., 2013). Similarly, Ni NPs are broadly useful in various grounds as adsorbents, solar and fuel cells, catalytic agents, gas sensors, magnetic, and antibacterial resources (Berchmans et al., 1995; Kumar et al., 2015). Their unit magnitude, morphology, and extraordinary crystalline nature make more impact of physiochemical things, so it is of unlimited significance to bio produce NiO NPs with minor particle dimension, rather fewer than 20 nm, which might accomplish the efficacy of their functions (Huang et al., 2001). In last decades nanomaterials attracted the relevance of a large number of researchers due to their diverse physicochemical characteristics from bulk materials.

These exclusive properties originated from the large surface area of NPs that caused to their solicitations in many areas remarkably in catalysis (Chaudhary et al., 2015; Mondal et al., 2020). Among the nanomaterials, NiO NPs have a cherished nanostructure due to their advantageous electronic, magnetic, and catalytic chattels (Lambat et al., 2019; Tanna et al., 2015). Distinctive procedures have been used by scientists in formulating NPs, and these may incorporates chemical, biogenic, and organic techniques (Khedkar et al., 2020; Nasrollahzadeh et al., 2015). Inappropriately, their drawbacks like rigorous energy ingestion in physical process extract the technique very costly. Moreover, the consumption of toxic chemicals like sodium borohydride, or sodium citrate, as a reducing agent in chemical method confines function in medical pitches (Narayanan & Sakthivel, 2010). The most vital topographies of NiO are outstanding electrochemical constancy, little cost, endurance, and a noble ion storage substantial with great distance optical density (Chaudhary, Potbhare, et al., 2020; Mohammadjoo et al., 2014; Patil & Kadam, 2002; Yuvakkumar et al., 2014).

Numerous approaches are used for the production of NPs, for example, physical, chemical, enzymatic, and biological. Physical methods include plasma arcing, ball milling, thermal evaporation, spray pyrolysis, ultrathin films, pulsed laser desorption, lithographic methods, sputter deposition, layer-by-layer progress, molecular beam epistaxis, and dispersal flame production of NPs (Joerger et al., 1999; Chaudhary et al., 2017). The foundation of the plant extract is known to stimulate the features of the NPs (Umekar et al., 2020). This is because altered extracts encompass different intensities and amalgamations of an organic reducing agent (Mukunthan & Balaji, 2010).

Including these, the herbal-extract-mediated synthesis of NPs has expressively expanded the courtesy because of its easiness (Chouke et al., 2019; Umekar et al., 2021). The herbal extract can act as a durable dropping, soothing, and surpassing agent and has drawn the notice of scientific community due to its simple, fast, cost operative, and ecofriendly nature (Chaudhary et al., 2021). In the formation of NiO NPs, more care has been given toward the biosynthesis of NPs (using plant extracts), predominantly because of their accessibility, easiness, cost active, and nature-friendly attitude (Ahmed et al., 2019; Potbhare, Chaudhary, et al., 2019). Furthermore, the herbal extracts act as both reducing and capping agents, thus preventing the accumulation of Ni NPs (Imran Din & Rani, 2016). NiO NPs have fascinated various academics because of their chemical stability, superconductivity, electrocatalysis, and electron allocation potential. Nanoscaled NiO with a wide bandgap of 3.7–40 eV is an inherent p-type semiconductor used in a widespread range of biological functions

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Phytofabrication of metal oxide/iron-based and their therapeutic and their therapeutic potentials: in-depth insights into the recent progress

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8.1 Introduction

The present era of science has been stimulating minimization in every sphere of commodity and technology and rising a new “Era of Nanomaterials.” Science, which is involving a manipulation of matter in the nanoscale, has revolutionized the scientific field in the name of nanotechnology. The idea and concept of nanotechnology was conceived by Prof. R. Feynman in 1959 in his lecture entitled *There’s Plenty of Room at the Bottom*, delivered at an American Physical Society meeting where he demonstrated a procedure to manage individual atoms and molecules. Further, development took place in 1974 at the International Conference on Industrial Production in Tokyo, where the word nanotechnology was used for the first time by N. Taniguchi to explain the superthin processing of materials of nanometer precision leading to the conception of nanosized mechanisms.

Every section of technology has received advantage because of nanoscience in various forms. The last decade has seen tremendous growth in this domain of science, which brings about advantages over conventional or available techniques. This has been a priority area of research for many, creating stalwarts and bringing inquisitive minds together in applying nanotechnology for the benefits of science and society.

8.1.1 Different ways to define NPs

Nanotechnology is the science of understanding and controlling matter at dimensions of roughly 1–100 nm. Several organizations have defined nanoparticles (NPs) considered as standard in terms as shown in [Table 8–1](#).

Table 8–1 Definition of nanoparticles by different organization.

S. no.	Organization	
1	American Society of Testing and Materials	An ultrafine particle whose length in two to three places in between 1 and 100 nm
2	International Organization of Standardization	A particle having spanning of 1–100 nm
3	British Standards Institution	All the three dimensions of nanoobject are in the nanoscale range
4	National Institute of Occupational Safety and Health	A particle having diameter of 1–100 nm and fiber having spanning of 1–100 nm

Lecture Notes in Networks and Systems 321

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Real-Time Markerless Facial Landmark Detection Using Deep Learning



Samyak Agarkar  and Kapil Hande 

Abstract Locating facial landmarks like eyes, eyebrows, nose, lips, facial outline, etc. can be used as the foundation for generating facial deformations caused by expressions and head movements, which is very crucial in 3D animation, the VFX industry, the gaming industry, VR & AR. This project intends to focus on building a robust and real-time Facial Landmark detection model by improving upon existing models. Over the past few years, a lot of research has been done for detecting facial landmarks without the use of markers. Yet, there is a huge scope for improvement in terms of accuracy and speed. There are three major types of facial Landmark detection algorithms: Holistic methods, Constrained Local Model (CLM), and regression-based methods. Holistic methods try to build a Global representation of facial appearance accurately but require a lot of processing power and time. CLM Build a local representation of facial appearance whereas, regression-based methods simply capture the facial shape and appearance information. Classical regression techniques are fast but have many limitations, for instance, they fail to detect landmarks in occluded faces. Neural networks and deep learning have opened up new possibilities in building models that are efficient, robust, and dependable. Though deep learning models are processor-intensive tasks, recent improvements in network compression and pruning have made it possible to use deep learning models in real-time on fairly low specification computers. This study intends to examine new combinations of previous implementations, new ideas, and heuristic information. The proposed model will be better in terms of speed than other models and on par if not better in terms of accuracy.

Keywords Facial landmark detection · CNN · Deep learning · Machine learning · AI

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Review of Data Mining Techniques in Environmental System: An Advanced Approach

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Abstract

The emergence of various data mining algorithms and its application to various fields include medical imaging, network traffic analysis, environment system etc. Environment system now a day is the most important area of people's concern in today's world since it has daily impact on human beings life. May it be earthquake, soil erosion, deforestation, increasing summer temperature, rain fall density/intensity, flood occurrences and the most important is the impact of all these ES factors to directly and indirectly on the human beings and their behaviour. The capability of data mining algorithms of finding pattern in a data can be applied to Environment System data which is largely distributed, heterogeneous, sparse, multidimensional and heterogeneous. This paper gives a brief survey of essential steps, related algorithms and details processes that deals in designing and dealing with ES data that are essential in development of data mining tool for finding and interpreting patterns in environment system data set. The design process of ES Tool using data mining techniques ranges from processing of rough data sets to transforming it into pattern for analysis.

Keywords: Clustering; data mining; environmental system; pre-processing; post processing.

Abbreviations

ES : Environmental System;
DM : Data Mining;
KDD : Knowledge Discovery from Data.

1 Introduction

For the decades the ES is largely ignored area for analysis purpose due to lack of proper data analysis tool or unavailability of the scientific tools. But the emergence of Data mining techniques and its wide use in different domains for finding or discovering patterns in large data sets have attracted Environmental scientist to consider this technique.

Data mining is the process of extracting hidden patterns from data and is becoming an increasingly important tool to transform this data into knowledge. It can be applied to data sets of any size (large volumes of data) and can be used to uncover hidden patterns to find valuable information but it cannot uncover patterns which are not already present in the data set. With the advent of the era of big data, buildings have become not only energy-intensive but also data-intensive. Data mining technologies have been widely utilized to release the values of massive amounts of building operation data with an aim of improving the operation performance of building energy systems [1].

Thus data mining is the overall process of finding and interpreting patterns from data, typically interactive and iterative, involving repeated application of specific data mining methods or algorithms and the interpretation of

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Sentimental Analysis on Social Media by using Deep Learning

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Abstract— Detection of depression through messages sent by a user on social media can be a complex task due to the popularity and trends in them. In recent years, messages and social media has ended up being a very close representation of a person's life and his mental state. This is a huge stockpile of data about a person's behavior and can be used for detection of various mental illnesses (depression in our case) using Natural Language Processing and Deep Learning. This project is about constructing a deep learning model using NLP to predict such mental disorders. STM networks are well-suited to classifying, processing and making predictions based on time series data, since there can be lags of unknown duration between important events in a time series.

Keywords— depression, social media, mental illness, deep learning, NLP

INTRODUCTION

Depression as a common mental health disorder has long been denned as a single disease with a set of diagnostic criteria. It often co-occurs with anxiety or other psychological and physical disorders; and has an impact on feelings and behavior of the affected individuals. According to the WHO study, there are 322 million people estimated to suffer from depression, equivalent to 4.4% of the global population. In today's world, communication through social media is emerging as a big deal. They're willing to share their thoughts, stories and their personal feelings, mental states, desires on social network sites , blogging platforms etc.. Receivers use the manuscripts from emails and other types of social media comments to form proper reasoning and to correct the mistakes. When people write digitally on social media, their texts are processed automatically. Natural language processing techniques are used to infer people's mental behavior.

According to WHO, depression is a common worldwide folio that affects an enormous amount of individuals irrespective of their age. There are multiple factors that interfere the depression detection and treatment like lack of professional specialists, social shaming, improper diagnosis and so on. The ever-lasting depression disorder could lead to suicide if the depressed individuals are not supplied with proper consultancy, instant help and can also suffer from anxiety. This work is targeted on the detection of depression and anxiety from tweets. The experiment conducted during this work requires the text data so the chosen data source is Twitter where people tweet about their feelings, hopes, desires, thoughts, stories and mental states.

The goals of our research are: collect the publicly available media messages of healthy and self-diagnosed individuals which contains mixed emotions so evaluate the extracted Twitter data and apply NLTK and deep learning classifiers such as LSTM-RNN to predict depressive and anxiety tweets. We can search for a solution to a performance increase through a proper features selection and their multiple feature combinations. First, we choose the most beneficial linguistic features applied for depression identification to characterize the content of the posts. Second, we analyze the correlation significance, hidden topics and word frequency extracted from the text. We compare the performance results based on three single feature sets and their multiple feature combinations. In our experiment, we use data collected from the Reddit social media platform.

Security and Privacy Preserving of Data using CP-ABE Scheme

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Abstract: Due to the rapid development of new technologies, data security is one of the big challenges in today's world. Particularly, in the healthcare field, a large amount of data is generated every day. To maintain the patient personal records by manually and handling them, is not very sure, and Also avoiding the paper-work in the health care industry is not a good practice. As more records are stored electronically they need security and confidentiality. Different methods were proposed to prevent both internal and external threats in the healthcare industry. In healthcare industries record are extremely sensitive; therefore requires more security and privacy when storing and sharing of those records. The security as well as the privacy of sensitive health records are the major challenges in health care industries. To prevent unauthorized access to the healthcare records the user should be authenticated to get access to the records. To secure the data, cryptography techniques are used. The first is symmetric key encryption techniques which use only one key for both encryption and decryption of the data. Their design simple but can be easily cracked by using brute force attacks. On the other hand, the second is asymmetric key encryption techniques which use a pair of keys, one for encryption, and the other for decryption, whose security is higher as compared to the symmetric key encryption ones but lack in time efficiency. In our proposed system different access control mechanisms are used to provide security and confidentiality on healthcare records.

Keywords

I. INTRODUCTION

Data is continuously exchanged over different networks. It is correct to say that a huge part of the data is private or confidential which demands stronger techniques of encryption. There are two commonly used cryptography techniques for securing the data that is transmitted over the network, these are encryption and decryption. Therefore, there are a lot many encryption-decryption systems to encrypt and decrypt the transmitted information. The first is symmetric key encryption techniques which use only one key for both encryption and decryption of the data. Their design simple but can be easily cracked using brute force attacks. On the other hand, the second is asymmetric key encryption techniques which use a pair of keys, one for encryption, and the other for decryption, whose security is higher as compared to the symmetric key encryption ones but lack in time efficiency.

We want to store the data in cloud computing provide many advantages in today's IT world, which enable flexibility and low-cost usage of computing resource. It provides computing resources dynamically via the internet but has some challenges related to data confidentiality, data privacy, and security that may occur. In health care industries record are extremely sensitive; therefore required more security and privacy when storing and sharing those records. The security, as well as the privacy of the sensitive health records, is the major challenge that prevents in the health care industries. To prevent this from unauthorized Access to the health records the user will have to be authenticated to get access to the record. In this paper, we have developed a new health care system to increase patient trust and information integrity through privacy and security. By using the ECC with CP-ABE are providing more security and privacy of health care records. the implementation is proposed using python as the high-level programming language. python supports built libraries to develop cryptographic implementations. There are many third-party organizations and developer communities that provide cryptographic extensions to develop projects. Minimum time required to access and deliver records. To make the system more secure. Less time spent on non-value-added tasks.

II. AIM & OBJECTIVE

The purpose is to design a medical application that contains up to date information about the medical industry. That should improve the efficiency of medical record management. Providing the online interface for data owner and data user etc. Increasing the efficiency of medical record management. Minimum time required to access and deliver user records. To make the system more secure. Less time spent on non-value-added tasks. ECC is better than RSA, they provide better security by our proposed system. The CP-ABE are providing more security and privacy of health care records. The main aim of the proposed system to increase patient trust and information integrity through privacy and security.

STUDY OF LEACH PROTOCOL TO REDUCE NETWORK AREA ENERGY IN WIRELESS SENSOR NETWORK

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Abstract - In remote sensor systems, filter convention control is more proficient in terms of channel utilization and energy efficiency. Vitality utilization is overwhelming portion in any wireless sensor systems to be work on. These are numerous low energy utilization steering Conventions outlined and tried to save vitality of a WSN and eventually to extend lifetime of network. This work proposed the utilization of LEACH (Low Energy Adaptive Clustering Hierarchy) calculation to which guarantees a harmony between energy utilization and postponement to determine energy issue in WSNs. Bunch based various levelled directing conventions assume a fundamental function in diminishing the energy utilization of remote sensor organizations (WSNs). To accomplish good execution as far as diminishing the sensor energy utilization, the proposed IEE-LEACH represents the quantities of the ideal CHs and precludes the hubs that are nearer to the base station (BS) to participate in the bunch Arrangement. Moreover, the proposed IEE-LEACH utilizes another limit for choosing CHs among the sensor hubs, and utilizes single jump, multi-bounce, and mixture correspondences to additionally improve the energy productivity of the organizations. The reproduction results exhibit that, contrasted and some current steering conventions, the proposed convention significantly decreases the energy utilization of WSNs

Key Words: LEACH Protocol¹, WSN²

1. INTRODUCTION

Basic test in far off frameworks is that radio connections are dependent upon transmission control, obscuring, and obstruction, which spoil the data movement execution. This test is exacerbated in far off sensor organizations (WSNs), where genuine imperativeness and resource limitations block the use of various progressed strategies that might be found in other far off systems. The essential, financially savvy arrangement dependent on the methodology of fiery package length control to push ahead the execution in these fluctuating conditions. A trade-off exists between the long for to lessen the header overhead by making pack immense, and the need to diminish bundle screw up rates (PER) inside the rambunctious

Channel by utilizing little package length. Existing methodologies commonly necessitate that a bunch of boundaries to be deliberately tuned with the end goal that it can all the more likely arrange the degree of stream seen by a specific information follow. Nevertheless, any settled

arrangement of boundaries won't adjust to the changing conditions since one boundary set doesn't fit.

An organization of organizations is called an internetwork, or just the web. It is the biggest organization in presence on this planet. The web massively interfaces all WANs and it can have association with LANs and Home organizations. Web utilizes TCP/IP convention suite and utilizes IP as its tending to convention. Present day, Web is broadly executed utilizing IPv4. In light of lack of address spaces, it is slowly relocating from IPv4 to IPv6. (WSN) is a correspondence stage, whatever can affect a couple of Data Correspondence features later on. Preceding now, WSN has been getting real investigation thought due to its different suitability in a couple of fields of human endeavour. WSNs depends upon a couple of minimal nonessential free devices called sensor centres to shape an association. The specific center points in WSN can recognize an atmosphere, measure the distinguished data, or send it to a central unit for planning through a far off association.

The regular interest for WSN keeps growing, going from military use to public, ground, and space use. WSN rose in view of the enhancements in the smaller than usual electromechanical arrangement (MEMS) development and in far off trades. WSNs have starting late become a fascinating field of investigation starting late; a WSN is contained a couple of sensor canters (distant) which partners with structure a sensor field and a sink. The major issues in the WSN are the enormous number of centers used, their low power rating, and their impediment to short division correspondence. These center points participate to accomplish information identifying, following, and transmission, making the far off sensors sensible for the checking of ordinary occasions and characteristic changes surveying traffic advancements, controlling security, and noticing military

These applications require a high trustworthiness of the sensor associations and to improve the immovable nature of sensor associations, progressing examinations have focused in on heterogeneous WSNs.

Experts have commonly accumulated sensor centers into bundles in bearing to achieve the purpose of association flexibility; each social affair has a gathering head (CH) who is picked by the people from a gathering or is pre-allotted by the association creator. Also, any sensor that is more

Trends in Machine Design

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Mechanical Monster's Application in Era of Agricultural Industry: A Review

Akshay Anjekar, Vinay Chandra Jha

Abstract

A role of Agriculture is so critical in the Indian economy. Over the last few decades, Indian agriculture has recorded good growth. Implementing done in this area. The multipurpose farming robot is a fundamental anew ideas in this field is very important, although a lot of work has been done major agricultural machine for full yield. Weeding, sowing seeds and spraying pesticides is the conventional method in agriculture. In India, bullocks, horses, and buffalo are still used by many farmers for agricultural operations. This would not satisfy the need for agricultural energy needs, in comparison to other countries around the world. To reduce the man power we are employing this prototype and which will fulfil all requirements and problems in real life. India is a country focused on agriculture in which 70% of individuals rely on the results of farming. But if we observe that with population growth the farm is spread among the family and because of this, farmers in India kept only two acres of farm on average. Economically, farmers are still very poor because they are unable to afford tractors and other expensive machinery, so they use conventional farming methods. So, we are designing this machinery that will fulfil all this need and solve the problem of labor.

Keywords

Agriculture, ploughing, water, fertilizer, farmers

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Design and Implementation of LEACH Protocol for Wireless Sensor Network to Reduce for Network Area Energy Improvement and Security Using MATLAB

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Abstract: In this Paper Wireless Sensor Networks (WSNs) have exploded in popularity in recent years as one of the fastest-growing developing technologies for delivering data over the internet. WSN is rapidly expanding its branches in practically every field of science and technology today. The WSN is made up of several tiny nodes that handle sensing, data collecting, aggregation, compression, and transmission. Because the sensor nodes are so small, the little battery only has a limited amount of power. As a result, the key issue for WSN is to effectively employ this insufficient battery capacity to extend the sensor networks' lifetime while reducing energy usage. However, when it comes to numbers, However, a number of advanced clustered routing protocols have already been used in WSN to reduce the amount of energy consumed. The study's main goal is to improve the Low Energy Adaptive Clustering Hierarchy (LEACH) protocol by implementing a new clustering routing topology. The process for selecting cluster heads in our proposed model is identical to that used in the standard Leach protocol. We have, however, partitioned the network's whole area into many rectangle dispersed sections. The LEACH algorithm was used in each area.

Keywords: LEACH Protocol, WSN

I. INTRODUCTION

WSN has seen an upsurge in attention in recent years as a result of its employment in several sectors such as military, medicinal, and environmental applications [1, 2]. The WSN is made up of a large number of low-power microsensor nodes that are spread across a vast area and have at least one BS [3]. Every micro-sensor collects data about physical or environmental parameters such as pressure, temperature, humidity, and so on [4] and sends it back to the BS. The placements of the nodes in a WSN are not preset, allowing the network to organise itself autonomously [5, 6]. contains sensor nodes that are randomly scattered, a BS that receives all data obtained from the environment, and the user who obtained data through The power unit is one of the most significant units. Because the batteries can't be recharged or changed, sensor nodes in such an environment are energy-constrained [3]. As a result, building an energy-aware protocol has piqued attention as a means of extending network longevity [8]. As a result, in most applications where all sensor nodes are bound by energy, which is connected to the network's lifetime, energy consumption is the most critical element. The limited power of nodes necessitates the creation of an energy-saving communication protocol An organisation of organisations is called an internetnetwork, or just the web. It is the biggest organisation in presence on this planet. The web massively interfaces all WANs and it can have association with LANs and Home organisations. The Web makes use of the TCP/IP protocol stack and IP as its default protocol. In today's world, IPv4 is widely used to access the Internet. It is gradually migrating from IPv4 to IPv6 due to a scarcity of address spaces. (WSN) is a correspondence stage that can have an impact on a few Data Correspondence characteristics in the future. WSN has gotten a lot of attention recently because of its various applications in a variety of domains of human effort. WSNs are wireless sensor networks.

WSN's popularity continues to expand, with applications ranging from military to public, ground, and space. WSN has risen as a result of advancements in the creation of microelectromechanical systems (MEMS) and in distant commerce. WSNs have become a fascinating field of research in recent years; a WSN is made up of a couple of sensor centres (distant) that work together to form a sensor field and a sink.

Design and Analysis of MIMO Dual Band Patch Antenna for 5G New Radio Applications in Mobile Terminals

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Abstract: This paper presents a dual-band monopole antenna design with compact size for 5G communication under 6 GHz band frequency. The metallic monopole stub structure is used for miniaturization of antenna. It has a compact size of $24\text{ mm} \times 14\text{ mm} \times 1.6\text{ mm}^3$. The suggested antenna has been design on FR4 material with $\epsilon_r = 4.4$ with 1.6 thickness. The L-shape monopole antenna is modified by adding semi-circular element in radiating structure of monopole to obtain dual-band resonance. The proposed antenna has 5G application in the bands of 2.5 GHz (2.34 GHz-2.62 GHz) and 3.6 GHz (3.20 GHz-5.20 GHz). The bandwidth of antenna getting 280MHz and 2300MHz at 2.5GHz and 3.6GHz respectively. VSWR is less than 1.06 for both the bands. The designed dual band monopole antenna covers 5G bands of 2.3-2.4GHz (n30/n40), 2.4-2.5GHz (n7/n38/n41/n90), and 3.2-5.2GHz (n77/n78/n80). This proposed dual band monopole antenna is suitable for 5G Communications.

Index Terms - Monopole, Dual-band, Miniaturization, 5G and L shape.

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I. Introduction

The fifth generation (5G) communication has been widely discussed to provide high data-rate communications in the future. The design and testing of the 5G communication system huge on the understanding of the propagation channels [1], and a large body of channel measurements is thus required. Currently, 5G mobile systems are broadening their spectrum to support a high data rate. In the World Radio Communication Conference (WRC) in 2015, the 5G candidate frequency bands below 6 GHz have been widely discussed, and the following frequency ranges have been suggested: 470–694, 2300–2700, 3300–3800, and 4500–4990 MHz Among them, 2.5 GHz & 3.5 GHz has been widely considered, as it can be accepted for most of countries. Therefore this paper was focused on the propagation channel characterizations at 2.5/3.5 GHz bands. Previously, 2.5/3.5 GHz propagation channel has been studied mainly for the Wireless applications with limited bandwidth & large size [2-4] or the Broadband Fixed Wireless Access [5-6]. Few works has been conducted for the 5G wireless propagation channels.

A compact dual-band antenna is designed for 4.5GHz and 7.8GHz 5G and C-band applications and the antenna satisfied the -10dB impedance bandwidth is 64MHz (4.468GHz-4.532GHz) and 128MHz (7.736GHz-7.864GHz) [7]. Dual-band miniaturized planar inverted F-antenna is designed for WLAN and 5G applications which has been designed to operate in the WLAN (2.4GHz), Bluetooth (2.4GHz), LTE2500 (2.5GHz) and 5G communication (4.5GHz) [8]. Single band elliptical Microstrip patch antenna is designed at 3.5GHz for 5G with impedance bandwidth around 700MHz and size is 48 x 26 mm [9]. Rectangular Patch antenna at 4.5GHz for 5G with impedance bandwidth around 700MHz and size is 50 x 40 mm presented [10]. But all this antenna having low bandwidth and large size so with the improved bandwidth & compactness which has been taken as an objective for this research work.

In this paper, a compact dual-band monopole antenna is proposed. In presented antenna, two frequency bands has been covered 2.5 GHz and 3.5 GHz. A compact dual-band antenna with excellent impedance bandwidth is proposed.

II. Antenna Configuration

The dimensions and geometry of the proposed dual band monopole antenna is shown in Fig. 2. The radiating L-shape element has been printed on top side of FR4 Substrate with $\epsilon_r=4.4$ and thickness (h) is 1.6mm. Partial ground plane is used to obtain the desired bandwidth and radiation response. Antenna-1 (as shown in Fig.1.a) is optimized to operate at frequency 3.5 GHz. The Antenna-1 structure incorporates L-shaped radiating



DEVELOPMENT OF ORBITAL WRAPPING MACHINE

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ABSTRACT

The aim of this paper is to study the Orbital Wrapping Machine and their various components and to develop a wrapping machine affordable for small scale industries or small start-ups. After taking analysis we got to know that most of the wrapping are too much costly which a small manufacturer cannot afford, so they use some old techniques to complete their process. So, we are going to build an affordable, easy to use, having basic functionalities for a small-scale manufacturer. In this machine only basic important functions are retained so that we can cut the cost in making. In this project we have done our best to design, fabricate a working model of Orbital Wrapping Machine.

1. INTRODUCTION

Wrapping Machine are used in manufacturing units for covering the surface of the product so that the surface of the product remains protected for unnecessary moisture.

Unnecessary moisture leads to corrosion, therefore wrapping the product with good stretch film protects the surface from getting corrode. Most of the wrapping machines are expensive which a small manufacturer cannot afford. They have a lot of features such as automatic cutting of the stretch film feature which increases the cost of the machine. For a start-up level manufacturer, they need basic functionality to do their job.

So, after studying the facts we made a successful model of a wrapping machine with basic features considering the need.

2. METHODOLOGY

As per our study we have found that the orbital wrapping machine used in industries are not suitable for the small or intermediate size of product to be wrapped. Due to the light weight of the product, they might get uplift with the wrap material or stretch

film. To overcome this situation, we make changes in traditional wrapping machine by providing supporting roller and clamp which will hold the product during wrapping.

2.1 PROBLEM IDENTIFICATION

The number of Orbital wrapping machine are used in large scale industries to wrap the Pallets and other products are very expensive which might not be affordable for small scale industries. The other problem which are generally observed in wrapping machine are. Tearing of stretch film, Shrinkage of wrap materials, Wrapping on Bar too loose or too tight, Uneven wrapping on the Bars, Loose wrapping cause the materials to get rust or other damages seen on bars, Lag in feeding movement of the materials to be wrapped by conveyors.

2.2 Design

The designing consist of selection of material and power source, synthesis of the mechanism, force analysis, determining the dimensions. This has been done and explained below in the part list.

Security and Privacy Preserving of Data using CP-ABE Scheme

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Abstract: Due to the rapid development of new technologies, data security is one of the big challenges in today's world. Particularly, in the healthcare field, a large amount of data is generated every day. To maintain the patient personal records by manually and handling them, is not very sure, and Also avoiding the paper-work in the health care industry is not a good practice. As more records are stored electronically they need security and confidentiality. Different methods were proposed to prevent both internal and external threats in the healthcare industry. In healthcare industries record are extremely sensitive; therefore requires more security and privacy when storing and sharing of those records. The security as well as the privacy of sensitive health records are the major challenges in health care industries. To prevent unauthorized access to the healthcare records the user should be authenticated to get access to the records. To secure the data, cryptography techniques are used. The first is symmetric key encryption techniques which use only one key for both encryption and decryption of the data. Their design simple but can be easily cracked by using brute force attacks. On the other hand, the second is asymmetric key encryption techniques which use a pair of keys, one for encryption, and the other for decryption, whose security is higher as compared to the symmetric key encryption ones but lack in time efficiency. In our proposed system different access control mechanisms are used to provide security and confidentiality on healthcare records.

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