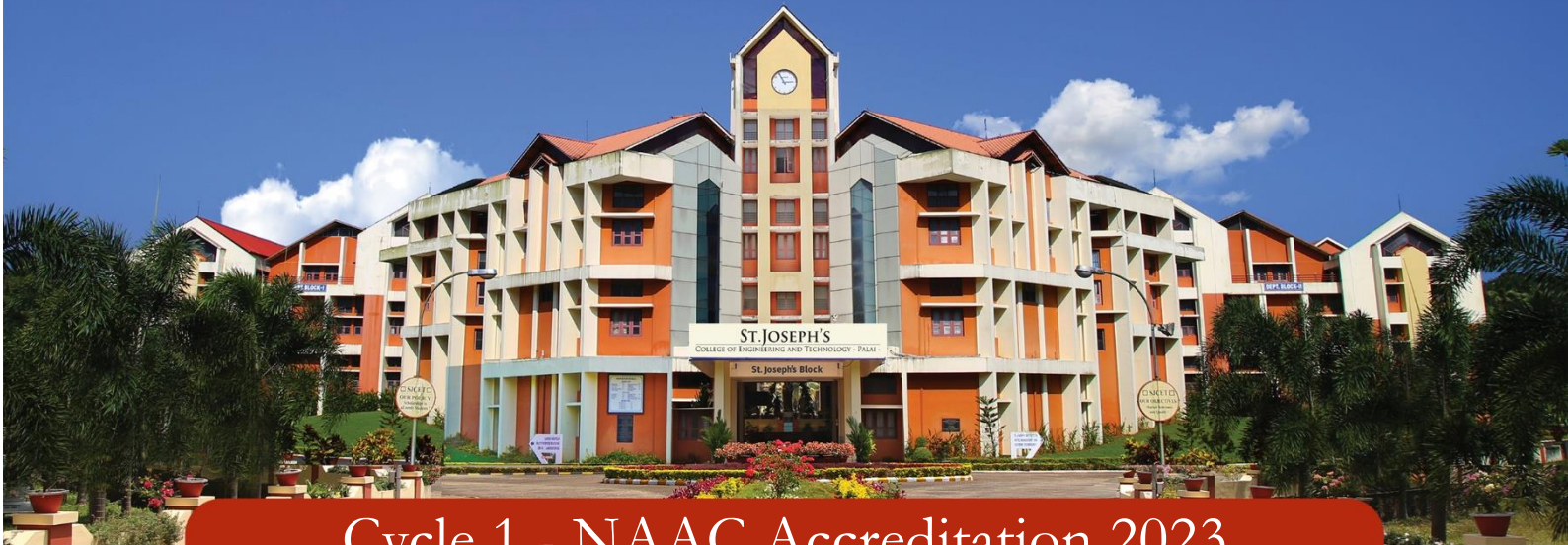




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# CHEMICAL RESISTANCE AND TENSILE PROPERTIES OF BAMBOO AND GLASS FIBERS REINFORCED EPOXY HYBRID COMPOSITES

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## ABSTRACT

*The chemical resistance of Bamboo/Glass reinforced epoxy hybrid composites to acetic acid, Nitric acid, hydrochloric acid, sodium hydroxide, ammonium hydroxide, sodium carbonate, benzene, toluene, Carbon tetrachloride and water was studied. The Tensile properties of these composites were also studied. The effect of alkali treatment of the bamboo fibers on these properties was studied. It was observed that tensile properties of the hybrid composites increase with glass fiber content. These properties found to be higher when alkali treated bamboo fibers were used in the hybrid composites. The hybrid fiber composites showed better resistance to the chemicals mentioned above. The elimination of amorphous hemi-cellulose with alkali treatment leading to higher crystallinity of the bamboo fibers with alkali treatment may be responsible for these observations.*

**Keywords:** Bamboo fiber, Composites, chemical resistance, Epoxy.

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## 1. INTRODUCTION

Several studies on the composites made from epoxy matrix and natural fibers like jute, wood, banana, sisal, cotton, coir and wheat straw were reported in the literature. Jindal (1) reported the development of bamboo fiber reinforced plastic composites using araldite (CIBA CY 230) resin as matrix. Though bamboo is extensively used as a valuable material from times immemorial (because of its high strength and low weight), the studies on this fiber reinforced plastics are meager. In the present work, the bamboo & glass fiber reinforced high performance epoxy hybrid composites were developed and their tensile properties with fiber content (with varying ratio of glass/bamboo fibers) were studied. The effect of alkali

# Environmental and Economic Impact Assessment of Flooring Materials Using Life Cycle Assessment

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**Abstract**— In India, various materials are used in the midst of advancement which encounters particular manufacturing and transporting process, which may ominously impact nature. Choosing an environmental friendly material will reduce the unfriendly environmental effect caused by building material. Nevertheless, for the right decision of a sustainable flooring material it must be balanced against the money related execution as well. This examination analysed three flooring materials (ceramic tile, composite marble and linoleum flooring) on their environmental and economic effect. The environmental impact analysis was done using the Building for Environmental and Economic Sustainability (BEES) software. The Life cycle cost of the materials were resolved reliant on Indian setting. . The result obtained were then analyzed using the VIKOR method to develop a common score for the assurance of a best sustainable material.

**Keywords**— Life cycle assessment, Life cycle cost Assessment, VIKOR, Sustainability

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## I. INTRODUCTION

These days the effect brought about by human exercises on nature is expanding radically and various environmental issues have developed at nearby, territorial and worldwide dimensions. As indicated by environmental performance index (epi) 2018, created by yale university and columbia university in a joint effort with the world economic forum and the joint research center of the european commission, india has been positioned 177 among 180 nations. Development industry comprises of different building materials which experience diverse manufacturing and transportation process. This may result in the arrival of outflow of different ozone depleting substances and other unsafe gases into the air, soil, and water, which may prompt a global warming, eutrophication, acidification, and different other ecological effects. Subsequently, there comes a requirement for the evaluation of natural soundness of items. Life cycle appraisal (lca) is turning into an undeniably significant strategy for making item related natural evaluations in india. Flooring materials is a significant component of a structure. It spread about half of the structure surface. In any case, while picking a flooring material its environmental effect can't be considered as the only choice criteria. Determination of a material relies upon economic factor moreover. There comes the need to coordinate the life cycle cost with life cycle evaluation. In this paper, study of life cycle assessment and life cycle cost assessment of three flooring materials (composite marble, linoleum flooring and ceramic tiles) is done to analyze the environmental end economic effects. The building for environmental and economic sustainability (bees) and vikor (visekriterijumska optimizacija i kom-promisno rešenje) that implies: multicriteria optimization and compromise solution approach of multi attribute decision making (mcdm) were utilized in this examination.



## II. DEFINITIONS

### A. Life cycle assessment

LCA is a tool for systematically analyzing the environmental performance of products or processes over their entire life cycle, including raw material extraction, manufacturing, use, and end-of-life disposal and recycling. Therefore, LCA is considered a "cradle to grave" approach for the evaluation of environmental impacts (Cabeza et al. 2014). Similarly, Joshi (1999) reported that the major share of the environmental impacts did not occur in the use, maintenance, and repair of the product itself, but occurred in the production, transportation, and disposal stages. The LCA studies are conducted in conformance with the ISO 14040 (ISO 2006) standards, which provide the minimum requirements for performing such studies (Weidema 2014).




## Emergy parameters for ensuring sustainable use of building materials

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### Abstract

The transition towards a more resource efficient economy require suitable policies to regulate the resources needed to support development initiatives. Unregulated extraction of natural resources to support infrastructure expansion activities has led to resource constraints and environmental degradation. Hence an appropriate regulatory tool is necessary to ensure sustainability in resource use. The utility of emergy for resource use regulation in the construction industry has been demonstrated in this study. Emergy analysis has been identified as a comprehensive approach which is able to accommodate the work done by biosphere towards the formation of resources along with the energy used, until refined products are evolved out of them. An environmentally fragile area has been chosen as the study area and building data for the past 25 years has been analyzed using emergy approach to evaluate the environmental performance of buildings. Different parameters to assess sustainability of materials and processes connected with construction sector has been evolved in line with the thermodynamic principles. Further, the investigations undertaken have also established that a sustainable material use policy can be evolved across the required time periods to facilitate efficient utilization of natural resources and building materials. Emergy per unit cost, emergy per unit area of the building and percentage of emergy content in various building materials are identified as the key parameters that could be used to regulate the environmental sustainability of resource use in the construction sector. Also, establishing a time scale based resource use factor to ensure renewability of every natural resource would help not only to evolve strategies for optimum resource use but also to identify the potential options for recycling/reuse of construction materials.

### Introduction

Buildings consume significant amount of natural resources as raw materials during its construction phase and often end its useful period of life by generating large quantities of waste (Bjorn, 2001). Over these years, this process has culminated in over-exploitation of environmental resources, global warming, damage to biotic and abiotic components and creation of higher environmental toxicity potentials (Wagner, 2002; Amoêda, 2015). Construction activity often consumes considerable quantity of inert natural materials towards the preparation of aggregates and building blocks such as clay block, granite, and natural stones. Uncontrolled extraction of raw materials from their places of origin to meet the rising demand, which initially might not be perceived as unsustainable, have resulted in severe environmental problems and damaged the local ecosystem by triggering regional instability (Brown and Ulgiati, 1997). These in turn raise significant challenges in ensuring sustainable use of construction materials that have very low replenishment rates (Bianchini et al., 2005). Several options are exercised to reduce this growing environmental degradation caused by the uncontrolled extraction and use of resources. Replacement of natural aggregates with recycled aggregates and development of new materials to ensure sustainable processes are found to have positive effect on reducing the emission of carbon dioxide—one of the most harmful greenhouse gas of anthropogenic origin (Burciaga et al., 2019; Reddy et al., 2019). Further, attempts are also made to configure the occupancy spaces in building units and to design the functional elements in order to reduce consumption of environmental resources and also the maintenance costs (Juan and Cheng, 2018).

The concept of material or product circularity is an emerging approach towards ensuring sustainability of construction materials. Demand to implement policies and regulations on material energy efficiency coupled with compelling need for certifications in environmental sustainability of building systems force the existing buildings too to renovate, repair or replace the redundant components or units (Andrić et al., 2017). The eventual demolition or modification of existing buildings to meet the aforementioned requirements in addition to the



## PalArch's Journal of Archaeology of Egypt / Egyptology

### Applications of Fibre Reinforced Concrete

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**Keywords: Bamboo fibre; bamboo reinforcement; Bamboo flexural strength; low cost construction.**

#### ABSTRACT

One of the commonly used building materials is concrete since it has many advantages. But due to its low tensile strength, it cannot be used alone everywhere. Therefore, steel is widely used to reinforce concrete. But due to its high cost, bamboo is one of the ways to replace reinforcement bar in concrete for low-cost construction. Due to its renewable nature and eco-friendly benefit, it plays a vital effort to prevent air pollution because it absorbs nitrogen. Bamboo grows in a few years and reaches its maximum strength and it is a natural fiber that helps to improve the strength of concrete and thereby used to reinforce concrete materials. In this research work, fiber-reinforced concrete is produced using bamboo as a reinforcing block material. Tests are done with C-25 grade concrete and the compressive strength, tensile strength, and flexibility of bamboo fibers are tested and compared with plain concrete

#### 1. Introduction

Production of iron, steel, glass, etc. pollutes the environment. Biodegradable resources such as plants and fiber have recently been used as a substitute for steel. Concrete with a breakable characteristic with a low value of tensile strength is therefore well-liked with fibers. Fibers have been widely used in the past to provide stability in many types of mortar and concrete. Reinforcement bar is one of the vital materials among materials used in Reinforced concrete and it provides concrete with high tensile strength and flexibility. The idea of

## Expedient Information Retrieval System for Web Pages Using the Natural Language Modeling

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**Abstract:** Retrieving of information from the huge set of data flowing due to the day to day development in the technologies has become more popular as it assists in searching for the valuable information in a structured, unstructured or a semi structured data set like text, database, multimedia, documents, and internet etc. The retrieval of information is performed employing any one of the models starting from the simple Boolean model for retrieving information, or using other frame works such as probabilistic, vector space and the natural language modelling. The paper is emphasis on using a natural language model based information retrieval to recover the meaning insights from the enormous amount of data. The method proposed in the paper uses the latent semantic analysis to retrieve significant information's from the question raised by the user or the bulk documents. The carried out method utilizes the fundamentals of semantic factor occurring in the data set to identify the useful insights. The experiment analysis of the proposed method is carried out with few state of art dataset such as TIME, LISA, CACM and the NPL etc. and the results obtained demonstrate the superiority of the method proposed in terms of precision, recall and F-score.

**Keywords:** Natural Language Modelling, Information Retrieval, LSA- Latent Semantic Analysis, Precision, Recall F-Score

### 1. Introduction

The recent swift advancements and the emergence of innovative technologies, has led to huge flow of data as a result of the daily routine activities that are taking place all over the world. The huge set of data that are flowing holds useful information that are capable enough to improve the quality of the service. The significant insights hidden in the huge amount of information are recovered by employing the information retrieval process. The information retrieval process is an upcoming procedure popularly used in examining the information from the big amount of data set that is in structured semi-structured or unstructured form. The retrieval of information is performed employing any one of the models starting from the simple Boolean model for retrieving information, or using other frame works such as probabilistic, vector space and the natural language modelling.

# Cloud Computing Based Framework for Blood Services

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## Abstract

A web application for efficient management of various blood banks and donor-recipient operations is being focused. The paper includes a central repository of information about various blood groups and its available donors along with their details, hosted on a cloud server. These details include donor name, blood group, medical details and location details. It also provides an option to search and find whether a particular blood group is available in any of the nearby blood banks or among the registered blood donors using cloud server. Search results will be listed based on the location of the requestor, ie, the nearest donors and blood banks. The system generates and sends mails requesting blood to the selected donors, based on donor response and given preferences, the system will provide the personal details, contact information and directions (using Google Geolocation services). Moreover, the system will have added features such as posting blood campaign invitations on the dashboard and showing live blood requests as a popup notification on the homepage. This online life saviour system is developed on PHP with Azure cloud platform and supported by MySQL database.

**Keywords:** Blood bank, donor, GPS, blood group

## 1. INTRODUCTION

Blood is a specialized body fluid. It has four main components: plasma, red blood cells, white blood cells, and platelets. Blood has many different functions, including:

- transporting oxygen and nutrients to the lungs and tissues
- forming blood clots to prevent excess blood loss
- carrying cells and antibodies that fight infection
- bringing waste products to the kidneys and liver, which filter and clean the blood
- regulating body temperature

The blood that runs through the veins, arteries, and capillaries is known as whole blood, a mixture of plasma and red blood cells. About 7 to 8 percent of the total body weight is blood.

Blood requirement in any emergency situation is satisfied by the blood bank itself. And this blood is compensated to the blood bank by the recipient's relatives or friends. This is because every blood bank needs to maintain certain units of blood for every blood group. Though, rare blood groups such as Bombay group and AB- are not kept in blood banks to avoid any wastage, in case it gets expired. Hospitals keep the record of people with rare blood groups. But this is kept in extreme secrecy to provide privacy and security to them. Rare blood

emergencies are met by directly contacting these people, and no more than the necessary units of blood required is collected [1].

A medical emergency is a severe injury or illness that poses an immediate risk to a person's life or long-term health. Any response to an emergency medical situation will depend strongly on the situation of the patient involved, and availability of resources to help them. Every hospital that handles accident cases and has operation theaters will have an integrated blood bank of itself. Trained medical professionals can give first aids and emergency care to the patient within the bounds of the knowledge they have, while waiting for the next level of definitive care. But hospitals cannot or should not proceed to assist patients that may need any blood transfusion during treatment. Emergency cases arriving at a hospital, without a blood bank, is forwarded to any of the hospitals which have an integrated blood bank.

Suppose there is some patient who needs blood urgently. Then, how would you handle this condition? Sometimes you will not be able to reach that patient on time even if you wanted to. People will go from one blood bank to another in search of blood, which will be time-consuming, and in worst cases they may not be able to reach on time. If a person wants to donate blood, he/she will have to come to the blood bank and fill a form. Then, a nurse/doctor will check his/her blood group and health conditions, only after which he/she is allowed to donate. All these situations are very time consuming. As we mentioned, blood banks keep certain units of blood for every blood group. Maintaining this limit consistently eliminates the need to go for a blood hunt during an emergency situation [2]. This can be achieved by compensating blood as soon as it is used from a blood bank, and by keeping and maintaining an efficient database of blood donors who are willing to donate blood periodically, as well as when called for will solve this crisis.

## 2. OBJECTIVE AND SCOPE

The main objective of this cloud computing based web application is to help satisfy a blood request made from anywhere and anytime, by maintaining all information pertaining to the blood donors and different blood groups available in each blood bank. This system provides transparency in this field, ie, makes the process of obtaining blood from a blood bank, corruption free and makes blood bank management effective. The system intends to make the blood search process much more efficient and quick. Therefore, no permanent registration to the website is needed for the requestor, they are only required to provide their basic details and contact information for verification. The search result is

# Analysis and Detection of Malware Using Intrusion Detection Technique for a Private Cloud

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## Abstract

Network security is one of the most promising sectors of today's world. For the easy access and storage most of the data's are not being kept in the computer but instead it is kept in a place called "Cloud". Cloud doesn't require computer memory and can be accessed from anywhere. Security is the main concern when we are using cloud. Files and folder which are getting uploaded and downloaded from the cloud should be free from malware. So the analysis and also detection plays a very important role. Intrusion Detection System (IDS) is used to study about malware and is being used along with a private cloud.

**Keywords:** Cloud, Security, Intrusion Detection

## I. INTRODUCTION

Cloud computing is one among the emerging technologies which provide performance enhancement and also make use of technology smartly. In cloud nothing is stored in the computer; instead it is stored in a place called "cloud". Most of the organizations are using cloud for their storage because it provides unlimited storage, so no worries about running out of storage. Organization uses mainly three services models including SaaS (Software as a Service), IaaS (Infrastructure as a Service) and PaaS (Platform as a Service) and deployment models including public, private, hybrid and community cloud. The advantages of cloud computing are cost-efficient, easy to maintain, backup and recovery etc.

Rather than having many advantages, cloud computing also has disadvantages. Before one get registered to a cloud, one should be aware that we are surrendering all our sensitive information to a third party server provider of a cloud. This is obviously a serious risk. This can be avoided for a extend by choosing a trustworthy service provider. Threats and attackers are the other issues in cloud. Since data is stored in cloud, it is vulnerable to external attack or threats. A public cloud is the most used deployment model but for accessing some features, paid versions should be taken which might be practically not possible. So, here a private cloud which is created for a small organization is described. A private cloud can act as a 'protective fence' built between an organization and attackers.

## II. WHAT IS PRIVATE CLOUD?

Basically there are four types of cloud including public, private, hybrid and community cloud. Private clouds are models developed for and by IT department of a particular organization behind their own firewall. It involves secure and distinct cloud based environment. This model is similar to Local Area Network (LAN).But it has a virtual environment that discard many security issues and provide security.

Some key properties of private cloud are described below:

- No outside resources is needed to determine the private cloud
- Support for protocols and linguistic transparency
- Enable information exchange audit
- Inter-cloud service exchange
- Higher reliability and performance
- Customizable and great control over hardware performance
- Cost and energy efficiency

Data encryption and security should be done for secure computing. This is generally done at the IP layer level using IPsec or at DTLS (protocol layer).The files and folders that are getting uploaded or downloaded to and from cloud should be free from malware. Malware are set of instructions that run on a computer and make it do something that an attacker wants to do.

## III. MALWARE DETECTION METHODS

One of the significant challenges within the development of secure cloud is related to correct identification and detection of malware. This is due to the reality that, within the majority of cases, malware is the first factor of initiation for large scale. Distributed Denial of Service (DDoS) attacks, phishy and email spamming etc. are some examples. There is huge effort made to study about the behaviour of certain malware in Internet. Generally they are termed as intrusion Detection System (IDS). IDS are a system that alert when some suspicious activity had generated in the network traffic. It scans a network for any unusual activity. Sometimes false alarms can



# Placement Management System for Campus Recruitment

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**Abstract:- From a student's perspective, placements can bring a wide range of benefits and opportunities. Training and management of placement is a crucial part of an educational institution in which most of the work is done manually. Manual system in the colleges requires a lot of manpower and time. With this project we aim to develop a web portal to solve this issue. The project is aimed at developing an application for the placement department of the college. The system is an application which will be accessed and effectively used throughout the organization with proper login enabled. It can also be used as an application for the Placement Officers in the college to manage the student information about placement thus reducing the manual work and consumes less paperwork. The system also provides the facility of viewing the personal and academic information of the student. The system gets the requested list of candidates for the companies who would like to recruit the people according to their eligibility criteria. Laravel framework is used to facilitate the process of making the program.**

## I. INTRODUCTION

Manual Training and Placement which is done at various colleges is by human intervention due to which there is a maximum chance of errors. The major problem is searching and updating of the student data. Placement officers have to manage the student's profile and their documents. Placement Officer has to collect the information of various companies who comes for recruitment. They have to arrange profiles of students according to various streams and notify them each time according to company requirements. Placement officers submit the information of students and if any changes or updates are required in the profile of any student, it has to be done manually. This process is so difficult and tedious when the number of users increases. This is tedious and time-consuming. Chances of missing data are also possible. It is also difficult for collecting, managing, and updating student data as the number of students increases[3]. 'Placement Management System' like many other placement management web sites, provides information on placement providers and the placements and also keeps up to date information of all students. It is a platform where students can view and assess their opportunities. The system will be having different types of accounts for different types of users such as Admin, Student, HODs, and tutor. A profile for each student is created with the necessary credentials for the portal. The system uses MySQL for database management and will sort the data of the student based on

eligibility criteria demanded by the respective companies and a list of eligible candidates will be prepared and they can choose if they are interested to attend that particular drive or test. Based on this a final data-set is created and the interested candidates will be registered automatically by the system. This way it reduces the work of college staff or faculty from the problems caused by human error and wastage of time doing all processes manually.

## II. PURPOSE

Placement Management System manages student information in the college with regard to placement. It improves existing system. It has the facility of maintaining the details of the student, thereby reducing the manual work. It will save time and energy which are spending in making reports and collecting data. Placement Management System can be accessed throughout the college with proper login provided.

## III. SCOPE

The project has a wide scope. Our project mainly helps in improving productivity and makes use of utilization of resources. There is no duplication of work as this was not the case when done manually. Thus it reduces labor and increases morale. The system intends user-friendly operations which may resolve ambiguity. The project is a total management and informative system, which provides the up-to-date information of all the students in the college. Our system also help the college to overcome the difficulty in keeping records of hundreds of students and searching for a student eligible for recruitment criteria from the whole thing. It helps in effective and timely utilization of resources. The project facilitates user friendly, reliable and fast management system. The placement officer itself can carry out operations in a smooth and effective manner. They need not concentrate on record keeping. The college can maintain computerized records thus reducing paper work, time and money.

## IV. PROJECT OBJECTIVE

The main objective of the placement management system is to reduce manual work and time[4]. It is difficult and time-consuming to collect all the details from each student. To avoid this problem we have planned to develop a web-based placement management system.

- Easy to find out the list of eligible students attending the drives.

# Web Application Security Scanner for Prevention and Protection against Vulnerabilities

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**Abstract** - In today's world, Cyber security has become an important leap in the form of jobs, education. But the reality is that only a few are aware of the major web vulnerabilities. Some statistical studies show that small scale industries are directly and indirectly connected to the world of the internet, but they are not aware of the major web vulnerabilities of their web application. Since website hosting has become common nowadays, most of the web applications are prone to attacks and malicious attacks of web applications. Assessing and avoiding these vulnerabilities require deep knowledge of these vulnerabilities. There are numerous online scanners available on the Internet that provides only paid limited service. The tools are made in a way that it can only operate in command line interface or in any programming language. So it is a difficult task for a normal person to operate the scanners without previous knowledge. This paper presents a vulnerability scanner that scans the website and detects specific vulnerabilities, along with its location and solution. The vulnerabilities that the scanner considers are: SQL injection, cross site scripting.

## 1. INTRODUCTION

Web applications have become an integral part of everyday life, but many of these applications are associated with vulnerabilities. In this era, where website hosting has become cheap and easy, the security has failed to keep up. Such vulnerabilities can risk small scale to large scale industries. Exploitation of vulnerability by an unauthorized person demands for quick recovery of these flaws so that reputation of the organization can be recovered. Therefore, vulnerability scanners can be widely used to evaluate the known weakness and vulnerabilities in a website. A large number of applications are becoming online, but how secure these applications are a matter of concern. Thus, it becomes necessary to find vulnerabilities that may cause severe risk to user's security. Vulnerability assessment means detecting the vulnerabilities before they could be used by an attacker. It is not only performed on a particular application but it can be run on any platform on which the application is run. This strategy only takes into consideration all the factors that can provide the correct answer for assessment of the vulnerability and security of the system. Therefore vulnerability scanners are used to scan the network and software application.

### 1.1 Types of Scanning

Scanning can be of two types [1], passive scanning and active scanning. In passive scanning, it is determined whether the tool can list out the vulnerabilities by considering the existing network. In active scanning, it is determined whether the queries can be made to the network for vulnerability. Scanners can be of different categories like port scanners, application scanners and vulnerability scanners [2]. Port scanners can be used to scan the ports for determining the open and closed ports, operating system, services offered. Application scanners are used to access a specific application in the network in order to track the weakness that can further cause a risk to the system. Vulnerability scanners find out the vulnerabilities in the system which when attacked by an attacker can exploit the system.

### 1.2 Mechanics of a scanner:

Mechanics of a scanner [3] is a three step process, crawling, simulation of attacks (fuzzing) and response analysis. In the first step, the scanner crawls into the web application that is part of the application and associated input pages and makes an index of all the visited pages. If the crawling mode is poor and the scanner has not reached the vulnerability, the scanner will surely miss the vulnerability. In the fuzzing step, the scanner sends some attacking patterns to the previously identified inputs. For each input and each vulnerability for which the scanner tests, the attacker module generates values that trigger vulnerability. In the response analysis phase the result of fuzzing phase is monitored to check if the web application is vulnerable and provide feedback to other modules. In the past, many of the popular websites have been hacked. Attackers are very active now and exploit the data without the user's knowledge. That is why security of web applications has become important these days. Web application security scanning is a software program which performs testing of web applications and identifies security vulnerabilities. Scanner does not scan the source code, but they perform only detection of the vulnerabilities [3]. Vulnerability management has many components like identifying the

# Mechy-Maintenance of Car Engine Using Augmented Reality

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**Abstract:** The automotive industry is home to some of the most impressive and exciting technological advancements of the last century. But with each new feature and enhancement, the owner's manual grows in size and complexity. And if you're not a car enthusiast, even the simplest of car maintenance tasks can be very overwhelming. Mechy is an innovative app that can make any car owner a mechanic. Instead of thumbing through a dense instruction manual, users can simply point their phone at their car and view the overlaid digital information. This can help them perform simple maintenance tasks such as oil changes or filling up windshield fluid simply place the mobile camera in front of your car engine to let the app identify all the parts. Identified parts will be shown in real-time. Once you have understood the way to perform a task you can keep your hands free and solve the problem.

**Keywords:** Augmented reality.

## 1. Introduction

The automobile industry has now evolved to be an unavoidable part of our life. It is used in many other sectors of the economy making it one of the most beneficial factors of human life. As a result, there are many maintenance workshops opened up for the same. But we know we must be self-sufficient always and must be ready to face any situation.

The study by Fox News [1] tested the knowledge of car users on their cars. This study stated that almost 36 percent of people do not even know how to fix a flat tyre.

In another survey conducted by Cooper tires, they found out that nearly half of the car owners in America are not sure if they would be able to change the engine oil. A similar other survey showed that people are also not aware of the type of oil needed for their cars and some don't even know how to jump-start the car battery.

Also in a survey conducted by the Fox News [1], it showed the mentality of the people towards car maintenance. It shows over 54 percent of people feel uneasy when they are dealing with a car mechanic. Four in ten Americans refuse to take a car to mechanic thinking about the huge deal of money for even small maintenance.

Some other results of the survey are shown below:

- 47 percent are extremely confident they could jump-start a car.
- 48 percent are extremely confident they could replace their windshield wipers.
- 39 percent are extremely confident they could fix a flat tyre.
- 37 percent are extremely confident they could replace their car's air filter.
- 37 percent are extremely confident they could replace a fuse.
- 33 percent are extremely confident they could change their car's oil.

These surveys show that in the modern world, one must know the basics of everything to survive. If not one can be easily tricked. Even for a car user, he must know the basics of the car if he wants it to be in a good condition and if he does not want to be tricked. The mechanic can trick the car users by mentioning any amount for the car maintenance if the car user does not know the basic operations. This is where the car user manual comes to the role. It is now necessary that a man must know the basics of the car if he wants to cope through any extreme situation. Even if the car broke down he must, to an extent, be able to do the basics that must be done to keep the vehicle on the run. But as we know the car user manual is tiresome work. It takes up both time and effort to a great extent. That is where our app takes up the role.

The main objective of our project is to make the car user self-sufficient and to help them overcome the emergency. Our app has a digitalized car user manual which helps them to get to the part more easily and faster. We have a real-time display of the basic operations that a car user must be aware of such as how to change the engine oil, how to change windshield fluid etc. These are done in real-time so that the user can get a clear view of how the operations are done.

## 2. Related Works

The BMW Augmented reality car repair [2] is an AR Smart glass that allows the user to see through the engine of BMW

### Article

A novel model of feature extraction for lung cysts detection in CT image using Minutiae based Mumford and Shah functional model

September 2019 · [Australian Journal of Electrical and Electronics Engineering](#) 16(35):1-12

DOI:[10.1080/1448837X.2019.1670535](#)

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#### Abstract

Lung cancer is one of the commonly occurring and most hazardous diseases to cure which increases the death rate day by day. In order to reduce the death rate, it is necessary to detect the lung cancer in its initial stages and thereby to assist the surgeons to clear away the portion of lung for the treatment of lung cancer, and tumours. This paper concentrates at developing a Computer-Aided Diagnosis (CAD) system for detecting lung cancer by analysing the Computed Tomography (CT) images of lungs. And it is carried out with filtering, binarization, image segmentation based on the Mumford and Shah model, Image enhancement including binarization and thinning, Minutiae Extraction using Termination and Bifurcation, Removal of False Minutiae Points and finally feature Extraction using grey level co-occurrence matrix (GLCM). Also, the system removes 98% of false minutiae and thus, is more efficient than other algorithms which achieve 80% to 90%. In addition, the image quality is analysed using various assessment Metrics. Finally, a comparative and robustness analyses are carried out with the existing self-learning approach in terms extracted values. The results of the proposed system show that there is significant improvement in PSNR value compared to the existing method.

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# A Novel Diagnostic Model For Lung Cancer Detection using Mumford-Shah and SVM Classifier



**Kishore Sebastian, S. Devi**

**Abstract:** Lung cancer is one of the very deadly diseases in the world. However, diagnosing it at an early stage and treating it properly can protect lives. Although Computer Tomography (CT) scan imaging is one of the fruitful imaging in the field of medicine, it is the hardest for clinicians to clarify and recognize cancer from those images. And it is carried out with Mumford and Shah functional model, and support vector machine (SVM) classifier. Also, the system takes less computation time and thus, is highly efficient than existing algorithms which grab 98% accuracy. Further, the performance analysis of the proposed system is executed using seven assessment metrics namely Classification Accuracy, sensitivity, specificity, AUC, F measure, Precision, Brier Score, MCC. Finally, the results of SVM are compared with KNN, Decision-Tree, and Adaptive Boosting algorithms in terms of the seven metrics. The results show that there is significant progress in the above measures than the existing method.

**Keywords :** Lung Cancer, CT Scan, Mumford-Shah Model

## I. INTRODUCTION

Lung cancer is one of the leading reasons of cancer death. It is hard to find, since it grows and it show signs only at the final stage. However, detecting it at an earlier stage and treating the disease can reduce mortality and probability. The fruitful imaging technique is CT imaging. It is credible for the detection of lung cancer, as it may expose every lung cancer nodules that is suspected [1]. However, the variability of the intensity in images and the anatomical misalignment by physicians and radiologists may produce dilemma in labeling the cancer nodule [2]. Recently, computer-assisted diagnostic has become a promising and reliable tool for radiologists and clinicians to accurately diagnose cancer [3]. Several research methods are being developed to detect lung cancer. However, some of the research works does not show any satisfactory accuracy in the detection of the disease and the works still need to be improved to grab high accuracy closer to 100%.

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Image processing methods [10] and machine learning methods have been implemented in order to detect and also to classify the type of lung cancer. The latest systems so far developed for lung cancer detection based on CT scan images are thoroughly reviewed, analyzed and proposed a new model.

## II. LITERATURE REVIEW

Many research works have been done on the diagnosis of lung cancer using various approaches to image processing and also machine learning. The authors [4] proposed a model that classifies between knots and normal anatomy of the lung. The model extracts the properties such as geometrical, statistical, and gray level features and classifies using LDA and as a gateway to separation. The model achieves accuracy of 84%, sensitivity of 97.14% and specificity of 53.33%. Although the model detects cancerous nodule, its accuracy is low and also the model uses no machine learning techniques and simple classification techniques are used. The authors [5] used the neural network for classification in CAD system to detect lung cancer. Their system achieved around 85% accuracy, sensitivity and specification. Their work promises to reduce the cost of implementation but still its accuracy is unsatisfactory. The K-means algorithm for clustering is used to compile the pixel dataset according to some features. This model performs classification using Neural network and the features such as entropy, correlation, integrity, BSNR, and SSIM are extracted using the gray-state co-occurrence matrix (GLCM) to achieve 90.7% accuracy [6]. The authors [7] developed a method for diagnosing lung cancer using an ambiguous interference system using gray conversion and binarization and an active margin model for decomposing the result. Classification of cancer cells is performed using the fuzzy inference system (FIS) which utilizes the extracted features for its training. Their model achieves the accuracy of 94.12%. The authors [8] developed a system using watershed method for segmentation and uses Gabor filter for pre-processing and achieves the accuracy around 90%. The review extensively showed that the above works does not differentiate the cancer cells as benign or malignant. The system [9] differentiate s lung cancer as benign or malignant using the primary data and the Housefield Unit (HU) in order to calculate the region of interest (ROI). The circularity, posterior dimension, area, eccentricity and shape features are extracted to train the SVM and also to classify in order to identify the benign or malignant nodule.

# Indoor Mapping Based on Augmented Reality Using Unity Engine

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**Abstract:- Every people, at some point in their life, may get lost inside a large auditorium, struggled to find their exit point at the airport, or may get late to a lecture because they couldn't find the right lecture hall at the university. But this way of getting lost inside complex and large venues could soon be a thing of the past. Nowadays, applications for indoor navigation for mobile devices are being common and they are needed for the people to find destinations inside large buildings. Different technologies like Wi-Fi Fingerprinting and Bluetooth Beacons are being utilized by most of the indoor navigation applications. These applications use pre-calculated paths and fixed background maps to lead the user to their destinations. Users of these systems need to have an understanding of how specifically indoor maps work and general map reading signals. Also, complex and accurate calculations are needed to be implemented by these systems to determine the routing paths before the navigation starts which could be affected by the unstable Wi-Fi signals. Meet Indoor Maps the next generation of indoor navigation. In this paper, we put forward an indoor mapping which is extended to 3D feature with Augmented Reality, with a growing concern on commerce and general wayfinding.**

## I. INTRODUCTION

Indoor Navigation or Mapping is a revolutionary concept that visualizes indoor venue and spatial data on a digital 2-Dimensional or 3-Dimensional map. It allows us to navigate through colleges, large malls, hospitals, auditoriums, etc.

In terms of complexity, Indoor Navigation is quite different compared to Outdoor Navigation. In the case of outdoor navigation, millions of people use the currently available technology like GPS as it does require much performance. Nowadays, built-in GPS and maps are found in modern smartwatches and smartphones. On the other hand, AR indoor navigation technology is quite complex as it consists of 3 modules that have to be categorized into the mapping of premises, populating the database, and user interface design. Augmented Reality (AR) depends on a dynamic, accurate 3D map that will enable experiences in the real-world. Showing people, assets, and places on a digital map enable solutions such as indoor navigation and indoor positioning.

AR Indoor navigation can be implemented using handheld devices like Google Glass [1] which are costly whereas the application discussed in this project is cost-efficient. The scope of this application lies in developing map databases for environments such as colleges, shopping malls, auditoriums, etc. Augmented Reality can be experienced when an image generated from the computer is being projected in the user's environment. It can be seen as a way of blurring the lines between the digital and the real world by superimposing virtual images within the contents of the real world.

## II. EXISTING SYSTEMS

There are two existing systems for indoor mapping which are Indoor mapping based on Bluetooth Beacons and Indoor Mapping based on Wi-Fi Fingerprinting using RSSI.

Bluetooth Beacons [2] are hardware transmitters. They are Bluetooth low energy devices that broadcast their identifier to the portable electronic devices nearby. The technology in these beacons enable tablets, smartphones, and other devices to perform actions when they are near to the beacons. To transmit a universally unique identifier, Bluetooth Beacons use Bluetooth low energy proximity sensing. These identifiers are then picked up by a compatible application or an operating system. Several bytes are also sent together with the identifiers that can be used to determine the device's physical location, track the customers, or can also trigger a location-based action on the device such as a check-in on the social media or a path notification.

Wi-Fi Fingerprinting using RSSI is another existing system. RSSI is the acronym for the Received Signal Strength Indicator [3]. To the naked eyes, they are usually invisible. The power present inside the received radio signal can be measured using RSSI. Traditional fingerprinting is also RSSI-based, but there is a slight difference. There are several access points in traditional fingerprinting and it has relied simply on the recording of the signal strength from these access points that are in range. This information is then stored in a database along with the client device's known coordinates in an offline phase. This stored information can be probabilistic or deterministic.

# Elements: Software for Image Editing Over Voice Commands

Akash Johnny Kunnath, Albin Saji, Benjamin G Nechicattu,  
Done Maria James, **Suma R**  
St. Joseph's College of Engineering and Technology, Palai

**Abstract:-** Image editing is simply the processes of manipulating images, in whatever format they are, for instance, digital photographs, old photo-chemical photographs, or illustrations. Traditional analogue image manipulation involves photo retouching, using mechanical tools like an airbrush to modify photographs else by editing illustrations with any traditional art techniques. Graphic software programs can be broadly categorized into vector graphics editors, raster graphics editors, and 3D modellers. This software is the primary tool with which a user may manipulate, enhance, and transform images. Many image editing programs are also used to render or create computer art from scratch over voice commands and direct interaction.

## I. INTRODUCTION

Image editing from scratch has become a time-consuming process for non-professionals as well as for upgrading professionals. Learning chunks of shortcuts and completely accessing editing tools via mouse and keyboard has become difficult, time-consuming and particularly overhead for at least a few. Here, we introduce an image editing interface that comprises of vocal command recognizer, image editing is difficult to perform with voice alone. For flexible and easy editing-control we use both voice and manual editing interaction, using mouse and keyboard. Selecting an object or a layer within the workspace has become easier. The editing panel is a grid fashion workspace and x-y axes (rulers) are scaled for selection of points at the workspace where an image is to be edited. This application contains an image storage directory linked to the desktop so that importing images becomes easy which is already in the application storage. There are combinations of filters that provide a professional touch to the images. Elements like adding texts and formatting, colour-comb are add-on features. The functions with varying values can be adjusted in percentage/values by saying it while specifying the arguments. Voice interface makes complex tasks easier and accessible as they Allow users to simply state goals without learning an interface.



Elements : Image editing made easy  
"Say What you need "

A Project by Elements

crew  
Akash Johnny Kunnath, Done Maria James,  
Benjamin G Nechicattu, Albin Saji, Suma R

Fig 1:- Info Screen

## II. INTENDED AUDIENCE

This software concentrates on people who are involved in image editing. Professionals, freelancers, tutors, students and even people who love to make images better and look good. Moreover, it especially concerns people who are differently-abled who are involved in image editing, with good craftsmanship, may be physically challenged.

'Elements' a user-friendly voice-enabled editing platform uses Voice commands to alter images. Out of numerous editing software that are available currently, none of them provide voice capability for editing which in turn makes these editors much more difficult. One of the major add on benefits is that this can be used by the differently-abled persons too mainly those who have some physical disability which makes 'Elements' adaptable to a large range of users. All you have to do is just say what you have to do. This makes it easier to use and simply you don't require by heart commands anymore. Image editing software like Photoshop, Fotos, GIMP, etc. have a wide variety of codes and commands which are a bit difficult to learn, and without these commands with hearted no one can work on any of these platforms with increased efficiency and full accuracy. By using 'elements' the same Performance accuracy can be achieved without even by hearing a single piece of command. You can do what you need to do just by saying what is to be done.

# Placement Prediction using Various Machine Learning Models and their Efficiency Comparison

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**Abstract:-** A placement predictor is to be designed to calculate the possibility of a student being placed in a company, subject to the criterion of the company. The placement predictor takes many parameters which can be used to assess the skill level of the student. While some parameters are taken from the university level, others are obtained from tests conducted in the placement management system itself. Combining these data points, the predictor is to accurately predict if the student will or will not be placed in a company. Data from past students are used for training the predictor.

But the problem was to find a suitable classification algorithm that could do the job with maximum accuracy for our data set. Different algorithms have different accuracy depending on the type of problem it has to solve and the data set it has to work with. So, we decided to select four algorithms, namely KNN, SVM, Logistic Regression and Random Forest and to compare the accuracy levels of each of these algorithms, with respect to our problem and data set. The result of this test would help us in determining which algorithm to use while implementing our predictor in the placement management system.

For this, we trained each of the algorithms with the data set that we acquired and tested it against some test data to find the accuracy of the algorithms. For each algorithm, we can easily obtain the True Positive, True Negative, False Positive and False Negative. With these four values, it was a matter of finding the accuracy using the accuracy equation.

## B. Sample Dataset

RegNo.	Quants	LogicalReasoning	Verbal	Programming	CGPA	Hackathons	certifications	current Backlogs	Placed
T150054001	11	11	10	11	10	1	4	0	1
T150054002	8	10	11	18	8.8	2	1	0	1
T150054003	11	11	10	8	9.63	3	2	0	1
T150054004	14	13	8	8	6.55	0	0	5	0
T150054005	10	7	7	10	7.27	0	0	6	0
T150054006	12	9	12	11	6.9	0	0	4	0
T150054007	14	9	12	7	8.6	2	3	0	1
T150054008	7	13	11	13	9.37	0	0	0	0
T150054009	9	8	13	12	7.21	0	1	5	0
T150054010	13	8	9	11	7.36	0	0	6	0
T150054011	12	9	10	9	8.55	0	2	0	1
T150054012	13	13	12	10	7.1	0	0	3	0
T150054013	12	9	14	12	9	1	5	0	1
T150054014	7	14	7	11	8.99	3	1	0	1
T150054015	9	12	7	12	6.53	0	0	4	0
T150054016	11	7	11	8	7.33	0	1	3	0
T150054017	8	8	9	7	6.52	0	0	6	0
T150054018	13	13	10	8	7.18	0	0	4	0
T150054019	7	12	13	9	8.78	0	4	0	1
T150054020	8	12	14	8	6.99	0	0	6	0
T150054021	13	11	11	11	8.43	0	2	0	1

Table 1:- Dataset used for Prediction and Analysis

**Keywords:-** Classifications, Dataset, Machine learning, Placement.

## I. INTRODUCTION

We aim to develop a placement predictor as a part of making a placement management system at college level which predicts the probability of students getting placed and helps in uplifting their skills before the recruitment process starts. We are using machine learning for the placement prediction. We consider K-nearest neighbour (KNN), Support Vector Machine(SVM), Logistic Regression, Random Forest to classify students into appropriate clusters and the result would help them in improving their profile. And accuracy of respected algorithms are noted and With the comparison of various machine learning techniques, this would help both recruiters as well as students during placements and related activities.

### A. Prediction system

In this paper we use machine learning techniques to predict the placement status of students based on a dataset. The parameters in the dataset which are considered for the prediction are Quantitative scores, LogicalReasoning scores, Verbal scores, Programming scores, CGPA, No. of hackathons attended, No. of certifications and current backlogs number. The placement prediction is done by machine learning using Logical Regression, Random Forest, KNN, SVM.



# Toll Pay: An Online Toll Payment Application

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**Abstract:** The increase in technological developments in many areas are helping various people in their daily life. Nowadays manual toll collection is becoming a burden for toll users, due to several reasons such as time taken for the toll payment, vehicle congestion, fuel wastage are some of the major problems. Toll pay app can help overcome these problems. The app generates a unique QR code for each of its users. The users are allowed to pass the toll station by scanning the QR code at the toll station. The scanning process is done by QR code scanner present in Toll employee app. Another Feature of the app is that whenever an ambulance reaches the proximity of a toll booth a notification is sent to the toll operators.

**Keywords:** Toll payment.

## 1. Introduction

The idea behind implementing online toll plaza payment is to automate the toll payment process thereby reducing the long waiting times at toll plaza using QR code generated by application. This system is used by vehicle owners, toll employees and ambulance drivers. Toll pay application is a mobile application which is used to reduce the problems associated with manual toll payment. QR code (QUICK RESPONSE CODE) is used to scan the embedded information [1].

The main objective of this application is,

- To Controls traffic at toll plaza.
- To reduce the pollution and fuel wastage at the toll plaza.
- To reduce manpower at the toll plaza.
- To reduce the time consumed during the process.
- To verify the payment of toll using QR code generated by application.
- To send a notification to toll plaza when an ambulance reaches its proximity

It is a user friendly app. Toll pay is an android application which is developed for lessening the over congestion that has become part of the metropolitan cities these days. This system makes the work easier at both sides (i.e. Toll user and collector), to keep track, as well as conduct amount payment in very efficient way. Global positioning system (GPS) technology is used to find the position of the vehicle as well as toll plazas accurately. When the destination toll is near to the user, an alert

message is sent to the user 500m before the toll plaza, a notification will be sent to the phone of the approaching user with Toll Name. Payment can be facilitated through mobile wallets. An electronic receipt is generated, with QR code which can be scanned by the QR readers at Toll Booth. The other objective is to use the GPS module of ambulance drivers phone to track the position of ambulance. This is done to generate a notification to toll plaza when an ambulance reaches at a 500m proximity of toll plaza.

## 2. Existing Systems

### A. FASTag

FASTag is a electronic toll collection system in India. The system was first introduced in India on 4 November 2014[2]. It is operated by the National Highway Authority of India (NHAI). It uses Radio Frequency Identification (RFID) technology for making toll payments directly from the account linked to it. A RFID system uses tags, which are attached to the objects to be identified. The tags are available to users from official Tag issuers or participating Banks [3]. RFID tags can be of three types which are passive, active and battery-assisted passive. There are two parts in an RFID tag, an integrated circuit for storing and processing information [4]. It also includes either fixed or programmable logic for processing the data [5].

In this sensors were placed above roads, a sensor identifies the vehicle details and the details are sent to server, which is processed and toll is collected. RFID technology is an image processing technique in which tags are scanned by detectors as an image, afterwards the image is processed by the server and remaining task are finished regarding toll collection of particular vehicle [6].

## 3. Proposed Method

The system is divided into three modules:

- (1) Toll Payer app
- (2) Toll Employee app
- (3) Administration
- (4) Ambulance module

# FLOOD RESCUE MANAGEMENT AND ZONE MAPPING USING GIS AND ADVANCED TECHNOLOGIES

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**Abstract** - This project is based on a disaster management application which deals with all humanitarian aspects in case of emergencies in order to lessen the impact of disasters. People can get information regarding rescue camps operating nearby in case of disasters like floods. Here the victims can request for a list of relief camps operating nearby their current location. Victims can raise their basic needs to the authority and meet their necessities on time with the help of this application during flood. There is a separate platform for the assessment of the post-disaster needs. The victims are provided with the benefit of restoring their losses during the flood Request for basic needs like food, cloth etc. request for medical services. The application has a flood mapping system which provides area navigation for rescue teams before conducting efficient rescue operations. Flood-affected roads are marked which provides guidance to the public for safe driving. Also, additional features in that particular zone like wells, ponds etc. and other obstructions can also be tagged which prioritize risk reduction during the disaster.

can mask landmarks leaving unprepared rescuers disoriented and unable to locate survivors. Many flood victims had to leave their homes and shift to rescue camps in order to keep themselves safe. They face a lot of difficulties due to the lack of basic things used in our daily lives. Thousands of flood victims have lost their homes, their assets, valuable goods including vital documents.

This paper describes a web page which is a quick solution to all the problems faced by the flood victims and the rescue teams. It helps the rescue teams to travel through the safer path option. This path can be shown in the map which is open to the public and is editable by the local guides or public. Users may feel unsafe in their own homes as the water level rises. This may force them to move to a nearby relief camp once they are aware that they are no longer safe in their homes. With the help of this application, users can request information like the exact location of relief camps near them. This information can be provided to them with the help of their current location by GPS.

## 1. INTRODUCTION

Flood, being a natural disaster, has a huge impact on both individuals and communities and has social, economic, and environmental consequences. The impacts of a flash flood includes loss of human life, damage to property, people being trapped, loss of documents, etc. to which the flood victims find no quick solution.

As communication links and infrastructure such as power plants, roads and bridges are damaged and disrupted, people are forced to leave their homes and normal life is disrupted. Thousands of houses were destroyed which left the residents with no choice but to shift to the nearest relief camp. Evacuating families and shifting them to relief camps are done to survive from any kind of live losses. A person can be trapped in their own homes due to a flash flood. In order to rescue them and shift them to a safer location, a rescue request must be sent to the rescue team. But the relief and rescue operation team would not know how to find their way to exact locations. They would not be aware of what exact obstacles are there on the chosen route such as lake, road or any other features, that is, teams in position don't have proper ground information.

Before dispatching rescue teams, it is necessary to know where to send them. Large expanses of floodwaters

There may be some missing cases and these can be reported by their relatives by uploading the missing person's photo, his\her address, and visible birthmarks. During floods, people may fear to get out of their homes and get themselves some daily essentials, mainly food and drinkable water for survival. These people can request their daily essential needs through this portal.

Flood Relief Portal also focuses on after effects caused by the floods, that is, post disaster need assessment. Flood victims may be left with nothing, not even for their survival. Documents of great value may be lost, their vehicles may be destroyed, they may be left with no food, clothes nor drinkable water, and some even may be hurt. Flood victims can find a solution to all these problems in this portal like vehicle repair services, request for lost documents, request for daily essentials like food, water, etc., medical services and much more.

## 2. EXISTING SYSTEMS

Some similar applications or web pages that are useful for flood victims or trapped ones are listed below:

### 2.1 OpenStreetMap

OpenStreetMap is built by a community of mappers that contribute and maintain data about roads, trails, railway stations, and much more, all over the world. Open Street

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# Improved multifunctional controller for power quality enhancement in grid integrated solar photovoltaic systems

[Fossy Mary Chacko](#), [Ginu Ann George](#), [Jayan M.V.](#), [Prince A.](#) **▼**

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## Abstract

### Purpose

This paper aims to propose an improved multifunctional control strategy for achieving real, reactive power flow control and the mitigation of power quality issues in grid integrated photovoltaic (GIPV) systems.

### Design/methodology/approach

The paper proposes a dual stage, three phase, multifunctional GIPV system with modified instantaneous reactive power (IRP) theory-based and modified synchronous reference frame (SRF) theory-based control algorithms for reference template generation with continuous load power requirement tracking. The control structure is designed so as to impart virtual distribution static compensator functionality to the photovoltaic inverter. The dual mode operation in active filter and renewable power injection modes provides enhanced capability to the GIPV system. A comprehensive evaluation of the dynamic behaviour of the GIPV system is carried out for various conditions of irradiance and load under MATLAB/Simulink platform. The performance comparison is done considering an uncompensated system and the GIPV system with both proposed control algorithms.

### Findings

The extensive simulation results demonstrate that the proposed modified SRF theory-based multifunctional control strategy shows superior performance in real and reactive power flow control; reduction in real and reactive burden of the utility grid; and regulation of dc bus voltage under varying scenarios of irradiance and load. Furthermore, there is improvement of grid power factor

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# Design of Transmultiplexer Filter Banks Using Ramanujan Sums

[Deepa Abraham](#)  & [Manju Manuel](#)[National Academy Science Letters](#) **44**, 33–38 (2021)**142** Accesses | **4** Citations | [Metrics](#)

## Abstract

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Ramanujan sums are sequences introduced by the famous mathematician S. Ramanujan in 1918.

Ramanujan sum  $c_q(n)$  is the sequence in  $n$  with periodicity  $q$ . Many arithmetic functions such as Euler's totient function and Riemann zeta function can be expressed using these sequences. These sums have many attractive properties which make them suitable for signal processing domain. Ramanujan sums are orthogonal and symmetric. Implementation of Ramanujan sum-based transforms is faster compared to discrete Fourier transform, since their computation involves only co-resonant frequencies. These transforms are particularly useful in identifying periodicities in signals. Ramanujan sums are integer valued. In this letter, it is proposed to use Ramanujan sums for the design of transmultiplexer



## Significance of Frequency Domain Features of PCG Records for Murmur Detection - An Investigation

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Automated identification of valve ailments from heart sound is a popular method and is a skilled task in cardiology. However, the automated methods, mainly depend upon the features extracted from the heart signal. The analysis of Phonocardiogram (PCG) signals, supply significant data about the heart functioning. In this paper, the significance of frequency domain features of Phonocardiogram (PCG) records for murmur detection is inspected. Frequency domain features like Dominant Frequency (DF), Spectral Centroid (SC), Spectral Flux (SF), Spectral Role-off (SR) and Median Frequency (MF), may be used in Artificial Intelligence (AI) to replicate the physical aspects of signals. The first three features are detected directly from the preprocessed heart signal, and the last two features are calculated from the Power Spectral Density (PSD) by means of an analytical method. It has been noticed that, among the features, MF and SR are superior to detect the presence of murmur than others. Besides, they are statistically more significant than all other features. The MF and SR can identify the murmur with an accuracy of 87.35% (dataset1), 76.67% (dataset2) and 80.59% (dataset1), 78.33% (dataset2), respectively without using any classifiers.

**Keywords:** Dominant Frequency; Frequency Domain Features; Heart Abnormality; Murmur; Median Frequency; PCG Signal; Spectral Centroid; Spectral Flux; Spectral Roll-Off.

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The feature extraction is one of the important steps in any artificial intelligence framework. Signal processing techniques employed for separating the features assume a vital role in schemes implied for automated study like fault identification of mechanical systems from the vibration data, problem finding of the electrical systems by considering various signals and detection of diseases by examining various

biological signals, etc., From the statistically significant and computationally competent features, extracted through proper signal processing procedures, flaws can be accurately traced, detected, and even their type can be recognized. The features will be of time domain, frequency domain, or Time-Frequency (TF) domain.

Coronary artery disease (CAD) is one of the main sources of death and ill health worldwide.



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# Signal periodicity detection using Ramanujan subspace projection

Deepa Abraham and Manju Manuel

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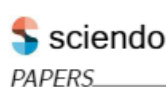
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Journal of ELECTRICAL ENGINEERING, VOL 71(2020), NO5, 326-332

PAPERS

## Signal periodicity detection using Ramanujan subspace projection

Deepa Abraham\*, Manju Manuel<sup>1</sup>

Signal periodic decomposition and periodic estimation are two crucial problems in the signal processing domain. Due to its significance, the applications have been extended to fields like periodic sequence analysis of biomolecules, stock market predictions, speech signal processing, and musical pitch analysis. The recently proposed Ramanujan sums (RS) based transforms are very useful in analysing the periodicity of signals. This paper proposes a method for periodicity detection of signals with multiple periods based on autocorrelation and Ramanujan subspace projection with low computational complexity. The proposed method is compared with other signal periodicity detection methods and the results show that the proposed method detects the signal period correctly in less time.

**Keywords:** Ramanujan sums, subspace decomposition, periodicity detection, autocorrelation

### 1 Introduction

Many real world signals such as music, speech, agriculture, medicine, finance, sales data, stock market, astronomy exhibit periodic and repetitive behaviour. Periodicity detection is important in understanding signal properties, finding the hidden relationship between different signal features, and assists in signal compression and classification techniques. Periodic signals repeat at regular intervals, and this regular interval is termed as period. A discrete signal  $x[n]$  is periodic, with period  $P$  if

$$x[n + P] = x[n]; \forall n \in Z, \quad (1)$$

where  $P$  is the smallest positive integer that satisfies (1). Several methods have been proposed to identify the hidden periodic components of a signal. These methods can be mainly classified [1] as time domain methods and frequency domain methods. Time domain methods are based on the autocorrelation function (ACF). In these methods, the threshold value needs to be specified to determine the dominant period. Besides, the peak value of autocorrelation function may be obtained at period  $P$  and multiples of period  $P$ . Frequency domain methods are based on spectral decomposition of signals. In the spectral decomposition method, Fourier transform (FT) is applied to signal, and from the inverse of Fourier coefficients of signal, fundamental period is calculated. But for signals with more than one period, this method is not reliable.

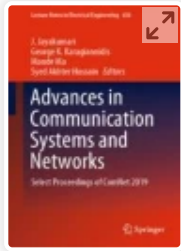
A method for periodicity detection combining both periodogram and autocorrelation technique is proposed in [2] and it is termed as autopoint. In this method, first, the periodogram of the signal is calculated to get an estimate of the potential periods. If these potential periods lie on the hill of ACF, then these periods are considered

to be valid periods, otherwise; they are discarded. But multiple periodicity detection of signals is not addressed in this method. Sethares and Staley [3] proposed a periodicity detection method based on periodic subspace projection. This method is based on Periodic transforms (PT), and it finds its own set of data-dependent basis elements. But periodic subspaces constructed using this technique lacks orthogonality.

The concept of exactly periodic signal and exactly periodic decomposition (EPSD) based periodicity detection is proposed by Muresan and Parks [4]. Period estimation of any signal, using EPSD is done by computing exactly periodic subspace (EPS) projections. These subspaces are orthogonal to each other only when their periods are divisors of signal length. Recently, P. P. Vaidyanathan has introduced the concept of Ramanujan subspace (Sq) [5-7], a subspace based on Ramanujan sums (RS). Two transforms based on RS, Ramanujan FIR transform (RFT) and Ramanujan periodic transform (RPT) are also proposed. Dictionary based approaches are used for identifying hidden periodicities [8,9] and these frequency dictionaries are designed based on DFT (discrete Fourier transform), RPT, natural basis and random basis. RPT and DFT based dictionaries yield better performance at lower SNR (signal to noise ratio) values. RPT is used to detect and analyse steady state visual evoked potential of brain signal [10,11]. RPT is also used to reduce noise in electrocardiogram [12,13].

Ramanujan filter bank (RFB) based on Ramanujan sums [14,15] is used to detect periodic patterns such as detection of absence seizures in electroencephalogram [16], detection of periodic segments in DNA [17] and detection of protein repeats [18]. Non adaptive comb filters are designed using RS in order to estimate the periodicity of signal. Time varying periodicity nature of

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**Advances in Communication Systems and Networks** pp 189–198

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# Effectiveness of Wilson Amplitude for the Detection of Murmur from the PCG Records

[P. Careena](#) , [M. Mary Synthuja Jain Preetha](#) & [P. Arun](#)

Conference paper | [First Online: 14 June 2020](#)

**555** Accesses | **1** Citations

Part of the [Lecture Notes in Electrical Engineering](#) book series (LNEE, volume 656)

## Abstract

Methods employed for the automatic detection of valve ailments from the heart records is a skilled task in cardiology. However, automated approaches, proposed for envisaging the cardiovascular diseases greatly depend on the features mined from the heart sound. The analysis of Phonocardiogram (PCG) signals, offers adequate information about the functioning of the heart. Feature extraction techniques in the time domain have analytical

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## Chapter



## Waveform Length Based Reliability Analysis for the Detection of Murmur from PCG Records

By P. Careena, M. Mary Synthuja Jain Preetha, **P. Arun**

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### ABSTRACT



< [Previous Chapter \(chapters/edit/10.1201/9780429353628-34/comparative-analysis-pnn-cnn-classifiers-retinal-disease-detection-using-fundus-images-siji-thomas-geevarghese-titus?context=ubx\)](#)

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# ARCHIVES


## IoT based Smart Environment Using Node-Red and MQTT


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 B. Kavya Deepthi, Venkata Ratnam Kolluru, **George Tom Varghese**, Rajendraparasad Narne and Dr.N. Srimannarayana

### Abstract

Internet of Things can be said as a promising technology that has wasted no time spreading across the globe and connecting the large range of people with the devices around them. The projected work aims to develop supported IoT smart application platform that permits devices to be connected, perceived and controlled remotely across a network infrastructure. Devices within the laboratory are connected to IoT sensible hardware kit and communicate through an MQTT protocol that can be defined as an electronic messaging protocol for machine-to-machine communication. IoT sensible hardware kits are designed with Arduino UNO and sensors. The system with Node-RED act as MQTT client and raspberry pi acts as an MQTT broker. Together with the energy consumption of individual devices, temperature values and level of humidity of the laboratory may also be monitored with the help of sensors and viewed within the dashboard and mobile application. It's determined that the appliances in our science laboratory are remotely monitored and controlled, thereby reducing their energy consumption significantly.

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## A Review on Environmental Performance Indicators Classification and its Challenges

**Soumya Varghese\***

**Dr. Jagathy Raj V. P\*\***

### Abstract

Firms manage its relationship with the environment to maximise their performance (Shoham *et al.*, 2005). Environmental performance is now a value significant to many competitive and successful companies around the world ( Jacobs and Kleiner, 1995; Sarkis et al., 2006). The excessive use of natural resources by rapid economic growth has damaged the environment and raised many environmental concerns. Hence several distinct, interrelated, environmental pressures from various sources raise and affect the operations of a firm. Companies has subjected to different types and degrees of pressure depending on the organisational characteristics and institutional framework within which they operate. Demands on companies to measure, document and disclose information about environmental performance will become more invasive in the same way that their financial results measure public companies, environmental performance will increasingly become a critical factor to scrutinise' (Greeno and Robinson,1992). Hence the conceptual paper is based on the review of literature on environmental performance, indicators for measuring environmental performance, and challenges involved in measuring the environmental performance.

**Keywords: Environmental Performance, Environmental Performance Indicators, ISO 14000, Eco-Management and Audit Scheme.**

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\*\*Professor, School of Management Studies, Cochin University of Science and Technology(CUSAT), [jagathyraj@gmail.com](mailto:jagathyraj@gmail.com), contact no: 984720016

# **ROLE OF ORGANISATION LEARNING ON THE ADOPTION OF GREEN INNOVATION PRACTICES AND ITS IMPACTS ON FIRM PERFORMANCE**

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## **Abstract**

Organisations with innovation orientation are more likely to implement policies, procedures, practices, and incentives specifically devoted to gathering and disseminating information about customer and competitor markets to stimulate and sustain innovation (Siguaw et al., 2006). Hence the study considers the statements of Calantone et al.,2002; Alegre and Chiva,2008) who points out that organisational learning has described as one of the factors that precede innovation and organisational learning strongly affects innovation (Zohoori et al., 2013). Based on the detailed review of literature, the conceptual paper was prepared with a prime focus to understand the role of organisational learning in influencing the adoption of green innovation practises and its impact on firm performance.

**Keywords:** Organisational Learning, Green Process Innovation and Green Product Innovation, Firm Performance.

## **INTRODUCTION**

Learning means a continual process which results in opportunities, challenges, unforeseen situations at work and any previous experience has turned into a learning experience. The keywords of these process are «analysis,» design», evaluation «(Gilley and Maycunich, 2000). Through learning mechanisms, a firm can acquire the tacit and codified dimensions of knowledge, or knowledge in disembodied and embodied forms (people, human capital etc.) Zaltman et al.,(1973) point out that a critical part of the first stage of the innovation process is openness to the innovation; that is, whether the members of an organisation are willing to learn and change or are resistant to innovation. Firms that always learn better chance of sensing events and trends (Day, 1994; Tippins and Sohi, 2003). Firms are investing a lot of effort toward green innovation since it can minimise production waste and increase productivity to make up for environmental costs(Chiou et al., 2011; Huang and Wu 2010). The knowledge is not only for cooperation but also for competition

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Article

A Novel Sequence Graph-Based Approach to Find Academic Research Trends

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Abstract

Research trends are dynamic, changing from time to time. It is an indicator of the latest innovations in each field of research, current areas of research, the latest technologies, and developments in each field of research. It also helps with future innovations and developments by providing current challenges and opportunities. This article proposes an efficient method to find research trends in each field of research of any subject area by using the graph-based subject classification of published papers. This methodology can be efficiently used to find research trends at any point of time, based on the published year of academic publications. A study of change in research trends in three subject areas - physics, mathematics, and computer science have been successfully conducted based on a total of 4500 publications since 2004.

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... A topic evolution algorithm is proposed, including topic segmentation and topic dependency relations calculation [7] to effectively discover important topics and reflect the evolution of important research topics. Soumya et al. propose an





# Integration of hydrokinetic turbine-PV-battery standalone system for tropical climate condition

Bony John<sup>a</sup>  , Rony N. Thomas<sup>b</sup> , James Varghese<sup>a</sup> 

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## Highlights

- Modelling of Savonius hydrokinetic turbine using ANSYS.
- Hydrokinetic resource assessment.
- HKT integrated PV battery system to energise remote villages on the banks of river.
- Generation of sizing curves against different number of HKT modules.

## Abstract


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Research Paper | [Published: 23 July 2020](#)

# Fabrication, characterisation, and finite element analysis of cold metal transfer–based wire and arc additive–manufactured aluminium alloy 4043 cylinder

[R. Pramod](#), [S. Mohan Kumar](#), [B. Girinath](#), [A. Rajesh Kannan](#),  
[N. Pravin Kumar](#) & [N. Siva Shanmugam](#) 

[Welding in the World](#) **64**, 1905–1919 (2020)

**1291** Accesses | **16** Citations | [Metrics](#)

## Abstract

An aluminium alloy (AA) cylinder measuring 145 mm diameter ( $\varnothing$ ) and 11 mm height was produced by wire and arc additive manufacturing (WAAM) using ER4043 filler wire and cold metal transfer (CMT) welding process. The macrostructure examination of the WAAM-processed cylinder revealed excellent bonding between the deposited layers without defects and exhibited superior structural integrity. The tensile strength and elongation percentage were recorded for  $0^\circ$ ,  $45^\circ$ , and  $90^\circ$  orientations and enhanced properties were observed compared with wrought counterpart. The hardness of additive layers steadily varied from bottom to top in the range of 58

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Original Article | [Published: 18 February 2020](#)

# Studies on influence of torch orientation on microstructure, mechanical properties and formability of AA5052 CMT welded blanks

[B. Girinath](#), [N. Siva Shanmugam](#)  & [C. Sathiyarayanan](#)

*Archives of Civil and Mechanical Engineering* **20**,

Article number: 15 (2020)

**436** Accesses | **4** Citations | [Metrics](#)

## Abstract

Generally, in gas metal arc welding (GMAW) high heat input causes drastic changes in the microstructures of weldment (fusion zone and heat affected zone), which in turns affects the performance of the welded blanks during forming operation. The present study focuses on the parametric effects such as welding current, welding speed and torch orientation concerning welding direction on mechanical properties, microstructural characterization and formability of AA5052 Cold metal transfer (CMT) welded blanks (WB's). Based on the macrostructure images obtained from various trials (trial 19, 20 and 21, which is corresponding to Drag angle of  $10^\circ$ ,  $90^\circ$  or Zero angle and Push angle




## Design and development of orthosis for clubfoot correction in infants an additive manufacturing approach

V.S. Ashish Vishnu  , [Tom Zacharia](#), [Lijo Paul](#)

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### Abstract

Clubfoot is a rare complex congenital deformity found in new born babies, with foot twisted inwards and downward. This condition, if not treated at infancy, may lead to permanent deformity. The victims suffer pain and difficulty in walking which result in failure to access education and employment leading to exclusion from society. Patients suffering from this deformity can be seen throughout the world and are generally mistaken to be affected by polio. The only non-invasive treatment is use of casting method (Ponseti) which has wide range of disadvantages. This method has not been properly substituted due to the lack of a better alternative. Current study suggests the development of a custom – made orthosis. [3D printing](#) technique can be used to fabricate this deformity correction orthosis. The 3D printed orthosis has an upper hand over the conventional casting process. Various parameters related to the treatment were considered in designing the orthosis. Prominent parameters being three dimensional movements, ease of use, comfort, immobilization and cost. The orthosis can be used throughout the treatment process without frequent replacement; this is a distinct advantage over the Ponseti method. The orthosis will replace the casting process and will prove to provide better treatment. Even though printing the orthosis on spot takes longer time than the conventional cast, its countless benefits make up for the waiting time. In the current work design and development of orthosis is achieved with CAD software and fabrication is made with [FDM](#) 3D printer using [PLA](#) filament.

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## Machining characteristics of micro-magnetic field assisted EDM ( $\mu$ -MFAEDM)

R. Renjith, **Lijo Paul**  Show more  Outline |  Share  Cite<https://doi.org/10.1016/j.matpr.2019.09.047> [Get rights and content](#) 

### Abstract

Electric Discharge Machining (EDM) is a thermal process where the substance is removed by a series of electrical emanations happening between an electrode and a workpiece plunged in a dielectric fluid.  $\mu$ -EDM is a novel machining technique proficient of developing micron-sized features irrespective of material hardness. This process is relevant in the production of miniaturized commodities where industry request for increasingly challenging materials has relinquished the limitations of conventional micromachining techniques. Some precedents include tool steel, tungsten carbide, and titanium used in the manufacture of microscale turning and milling equipment, micro-mould and die making and diesel fuel injector fabrication While EDM, debris particle does form in the machining gap from the eroded materials. If they are not instantly dislodged, arcing occurs and this depreciates the machining efficiency. The introduction of the external magnetic field will facilitate the rapid removal of debris away from the machining gap. The experiment is carried out in an indigenously prepared EDM setup. A magnetic field arrangement is developed in the existing setup to conduct the investigations. The experiment is performed based on Taguchi's L9 series. The investigation is conducted under the voltage range of 35 V, 40 V and 45 V, the frequency of 2 kHz, 4 kHz and 6 kHz and the duty factor of 60%, 70% and 80%. A comparative study is established on the machining characteristics of EDM with MFAEDM.

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Processes, Volume 10, Issue 9, September 2022

Babu, J., ..., Davim, J.P.



## Experiment on pollution control in $\mu$ -abrasive jet machining using liquid films

P.S. Vishnu  , P.V. Pradeep, Lijo Paul[Show more](#)  Share  Cite<https://doi.org/10.1016/j.matpr.2019.09.053>[Get rights and content](#)

### Abstract

Micro Abrasive Jet Machining ( $\mu$ -AJM) uses a high-velocity abrasive jet to erode features in target substrates for a variety of applications, including microfluidic device fabrication and micro-electro-mechanical. AJM can result in dusty and pollution environments due to airborne, abrasive particles that eventually settle. In this experiment, the workpiece is kept in liquid medium and experiment is conducted to investigate the effect of liquid film thickness on Material Removal Rate (MRR), Radial Overcut (ROC) and percentage captured particles. The liquid film thickness is varied from 1 mm to 3 mm. From the experiment result, input parameters are optimized for the required output responses. The Microcontroller and sensors are used for maintaining the level of the liquid film inside the chamber for dust absorption.

### Introduction

Abrasive jet micro-machining uses a compressor air jet to accelerate abrasive particles to the workpiece at high velocities to remove the material from workpiece [1]. Abrasive jet machining (AJM) is comparable to sandblasting and effectively removes brittle and hard [2] materials through erosion. AJM has been used for rough operations like rough finishing and deburring. With the increase of the necessities for machining of glass [3], electronic devices [4], ceramics, LCD's and semiconductors, Abrasive jet machine has become a helpful tool for micro-

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Processes, Volume 10, Issue 9, September 2022

Babu, J., ..., Davim, J.P.



# ANTIMICROBIAL ACTIVITY AND PHYTOCHEMICAL STUDY OF *PHYLLANTHUS* *EMBLICA* FRUIT

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## Abstract

The use of plants and plant products as medicines could be traced as far back as the beginning of human civilization. Medical knowledge derived from traditional societies has motivated searches for new bioactive compounds derived from plants that show potent activity against bacterial pathogens. The present study was carried out to determine the phytochemicals and antibacterial activity of different extracts (hexane, ethanol and methanol) of the medicinal plant *Phyllanthus emblica* against selected bacterial pathogens. The methanolic and ethanolic extract of *P.emblica* pericarp showed remarkable activity against the tested organism. The phytochemical screening of different extracts of *P.emblica* revealed the presence of secondary metabolites such as alkaloids, saponins, phytosterols, tannins, flavonoids, proteins, phenols, glycosides, terpenoids, triterpenes, quinones and carbohydrates. Based on this TLC and Column chromatography were performed on the more bioactive methanol extract. Further investigation on the structure elucidation of the bioactive compound was done using UV, IR analysis. The results of the present study suggest that the extracts of *P.emblica* pericarp contains compounds with antibacterial properties that can be used as antimicrobial agents for the therapy of infectious diseases caused by pathogens.

**Key words:** *Phyllanthus emblica*, Antibacterial activity, Phytochemicals, Disc diffusion, UV, IR spectrum.

## 1. Introduction

The use of plants and plant products as medicines could be traced as far back as the beginning of human civilization. The earliest mention of medicinal use of plants in Hindu culture is found in "Rig-Veda. It is Ayurveda, the foundation of medicinal science of Hindu culture, in its eight division deals with specific properties of drugs and various aspects of science of life and the art of healing[1]. Medicinal plants are a source of great economic value all over the world. Nature has bestowed on us a very rich botanical wealth and a large number of diverse types of plants grow in different parts of the



# Isolation, phytochemical analysis and biological studies of the fruit- *Mimusops elengi*

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## Abstract

The use of plants and plant derived phytoconstituents in medicine is getting popularized because of herbal medicines are cheaper, easily available and derived from natural origin with higher safety margins and lesser or no side effects. *Mimusops elengi* is an evergreen tree of the family Sapotaceae. It is most frequently known as “Bakul” which is cultivated as an ornamental tree largely in gardens. Conventionally, different parts of this plant are used in various ways to cure number of human ailments. In the present study, the pericarp of *M.elengi* was extracted successfully with solvents like hexane, ethanol, and methanol using Soxhlet apparatus. Phytochemical screenings were performed as per the standard procedures. Alkaloids, tannins, saponins, phenols, flavonoids, proteins, glycosides, terpenoids, triterpenes and quinines were identified as the major compounds. Further investigation on the structure elucidation of the bioactive compound was done using UV, IR, and GC-MS analysis. The antibacterial activities of extracts were studied by disc diffusion method. The results of the present study suggest that the extracts of *M.elengi* pericarp contains compounds with antibacterial properties that can be used as antimicrobial agents for the therapy of infectious diseases caused by pathogens.

**Keywords:** *Mimusops elengi*; Antibacterial activity; Phytochemicals; UV; IR; GC-MS.

## 1. Introduction

Nature has been a source of medicinal agents since times immemorial. The importance of plant derived products in the management of human ailments cannot be overemphasized. It is clear that the plant products harbor an inexhaustible source of active ingredients invaluable in the management of many intractable diseases. Antibiotic resistance has become a global concern [1]. Increasing incidence of multiple resistances in bacteria in



## EXPLORING DEVOPS: CHALLENGES AND BENEFITS

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**Abstract:** The continuous evolving of the information technology towards the enhanced agile and collective strides of working from the document driven working has turned the focus to the features of the information system development and the operations. These agile approaches have paved way for the concepts that provide an incorporated development and operations coined as the DevOps. The DevOps is an enterprise software development and viewed as the appropriate perception for the simultaneous distribution and the positioning of the working software. It enhances and modifies the relationship by promoting improved communication and the cooperation among the business unit. However the adoption of the Development and the Operation being a complex task the paper presents the review on the challenges and the benefits of the DevOps and also explores the DevOps to offer an enhancement in the adoption of the DevOps in the information systems.

**Keywords:** Development, Operation, DevOps, Agile Approaches, Challenges, Benefits benefits , Enhanced Communications and Co-operation, Traditional Approaches.

### 1. INTRODUCTION

The DevOps which is a combination of two words development and operation defines the art with a bulk of procedures that cause development and the operation crew to complete the software development to gather. It enables the organization to develop and enhance the product in swift way when compared to the traditional approaches used in the software development. This makes the DevOps [1] to gain a prominence at a high speed.

The DevOps [2] stimulates a team up between the development and the operation group to position the code to have a faster production in a way that is automated and the repeated. It enables the organization to speed up the delivery process in the application and the services. It ensures an improved customer service and competence in the market for the business.

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## Video content analysis and retrieval system using video storytelling and indexing techniques

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<p><b>Article Info</b></p> <p><i>Article history:</i>        Received Aug 7, 2019        Revised May 5, 2020        Accepted May 20, 2020</p> <p><i>Keywords:</i>        Video content analysis</p>	<p><b>ABSTRACT</b></p> <p>Videos are used often for communicating ideas, concepts, experience, situations, because of the significant advances made in video communication technology. The social media platforms enhanced the video use expeditiously. At present, recognition of a video is done, using the meta like video title, video descriptions, and video thumbnails. There are situations where a video searcher requires only a video clip on a specific topic from a long video. This paper proposes a novel methodology for the analysis of video content and using video storytelling and indexing techniques for the retrieval of the intended video clip from a long duration video. Video storytelling technique is used for video content analysis and to produce a description</p>
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Original

## An Automated method for the analysis of bearing vibration based on spectrogram pattern matching

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**Abstract:** As a mean for non-intrusive inspection of bearing systems, the scope of predicting their condition from the acoustic vibrations liberated during their operation, utilizing signal processing methods, has been of extensive research, over decades. Vibration being highly non-stationary, time domain as well as spectral features cannot characterize its behavior. Even though spectrogram is a time-frequency domain feature extraction technique, its interpretation is tedious and perhaps, subjective. In the proposed method, the spectrogram images of the normal vibration data is compared with that of the contextual vibration, using Structural Similarity Index Metric (SSIM). It is hypothesized that the pattern similarity between the contextual spectrogram and baseline is low when the bearing is faulty. The SSIM between the spectrogram image of normal bearing vibration data and the baseline is different from those between the baseline and vibration data corresponding to Inner Race Failure (IRF), Roller Element Defect (RED) and Outer Race Failure (ORF). Via the proposed method of spectrogram pattern matching based on SSIM, the subjectivity in the comparative interpretation of spectrogram is eliminated fully. The SSIM corresponding to the vibrations acquired from normal and faulty bearings differ with a P value of  $4.43693 \times 10^{-16}$ . The technique can distinguish defective bearings with, 95.74% sensitivity, 96% accuracy and 100% specificity, without dismantling or open intervention.

**Keywords:** Bearing fault, pattern matching, spectrogram, structural similarity index metric, vibration

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### 1. INTRODUCTION

Bearings are one of the prominent components in most of the machines in process industries. They establish free

rotational or linear movement, by reducing friction. Bearings may turn faulty due to heavy loading, insufficient lubrication and ineffective sealing. Several studies have stated that the major cause of failure of rotating machines is due to bearing failure (Li, Jiang, Hu, & Peng, 2016; Li, Jiang, Wang, & Peng, 2016). Unexpected failure of the bearings may damage other parts of the machines also and may increase downtime

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# Video Coding of Various Decomposition with Encoding Techniques

**Nithin.S.S, L.Padma Suresh**

**Abstract:** In a period of past ten years, Compression or coding of video has been elaborated as a vital role in the part of total communication. Multi resolutions techniques play a vital part in the coding of image and video. Wavelet and curve let transform are one of the popular and efficient technique in video coding. In my paper, I am operate to implement various coding based methods with (EWT)empirical wavelet transform, different wavelets ,curvelets with various encoding techniques. They are video coding with EWT and H.264(VEWH), video coding with EWT and LZW(VEWL), video coding with EWT and Huffman with SPIHT(VEWHS), video coding with mexican hat wavelet transform and SPIHT(VMWS), video coding with dual tree wavelet and SPIHT(VDTS), video coding with 3D dual tree wavelet transform and SPIHT(V3DTS), video coding with curvelet transform and SPIHT(VCTS) and video coding with dual tree complex wavelet fractional transform and modified SPIHT(VDTCWFS). Next we implement these methods with the assist of matlab 2014 and 2015, and then analyze these techniques by using PSNR and compression ratio.

**Index Terms:** (EWT) Empirical wavelet transforms, H.264, VEWH, LZW, VEWL, SPIHT, VEWHS, VMWS, VDTS, V3DTS, VCTS, VDTCWFS, PSNR

## I. INTRODUCTION

The communication/transmit of a huge amount data of video is processed only by restricting the size but it is attained by the use of video compression techniques. Different areas such as genetics, astronomy, video communications, remote sensing and medical field is the main application of (DIP) digital image processing. deliberate to provide a digital description of a signal. When the input datas like mage, video, and audio signals are in compressed form, then we can operate this in various demands on the idustry or customers. Most of the operations related to image processing need compressed or coded data for storage and other operations. Predominantly, majority signals are maintained in the time domain condition and the processing of signal is emerged on in order to get more information. The signals become tranmuted by various mathematical analysis functions for this basis. The wavelet transform is a wave structure which has productively restricted duration that has a minimum utility of zero. The phrase wavelet approaches from the fact that wave up and down over the axis.

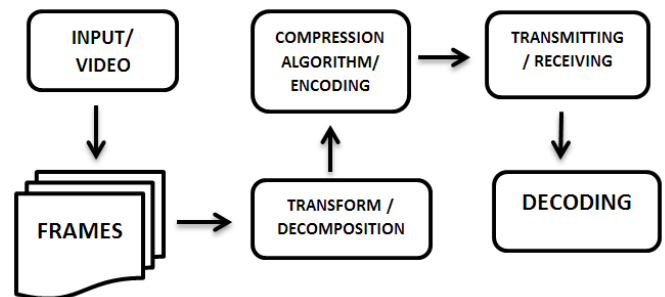
The wavelets have glowing outcomes in the domain of video processing, and have been used to find many

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problems/applications such as video/image compression or coding and restoration. The figure 1 represents block representation of basic compression/coding of the video or image. Multi resolutions techniques play a vital part in the coding of image and video. Wavelet and curve let transform are one of the popular and efficient technique in video coding. In my paper, I am operate to implement various coding based methods with (EWT)empirical wavelet transform, different wavelets ,curvelets with various encoding techniques. They are 1) video coding with EWT and H.264(VEWH), 2)video coding with EWT and LZW(VEWL), 3)video coding with EWT and Huffman with SPIHT(VEWHS), 4)video coding with mexican hat wavelet transform and SPIHT(VMWS), 5)video coding with dual tree wavelet and SPIHT(VDTS), 6)video coding with 3D dual tree wavelet transform and SPIHT(V3DTS), 7)video coding with curvelet transform and SPIHT(VCTS) and 8)video coding with dual tree complex wavelet fractional transform and modified SPIHT(VDTCWFS). Next we implement these methods with the assist of matlab 2014 and 2015, and then analyze these techniques by using PSNR and compression ratio.



**Fig 1: Block representation of basic compression/coding**

## II. VIDEO CODING WITH EWT AND H.264(VEWH)

In this method, compression or coding was executed with the help of empirical wavelet transform and H.264. EWT is mainly used for decomposit the data consider to the information in that. So it is conventional to many approaches. In this work/ implementation, we decomposit the data by the usage of emperical wavelet transform and next encode it by H.264 coding. The figure 2 denotes the block presentation of this implementation. Here first the video is converted in to frames by using matlab 2015. Then the decomposition is done or processed by the use of emperical wavelet transform. The compression/coding process is done with the help of H.264 coding. Then we can easily transmit this data. The reconstruction part is done with the help of inverse transform and decoder. The performance


# ARCHIVES

## New Analysis of Video Encoding/Decoding Using EWT and Combination of H. 264/AVC and USPIHT

 **S.S. Nithin** and Dr.L. Padma Suresh

### Abstract

In the present days, the central part of the transmission media is video coding. Now video coding contains lot of applications. The main application of our approach is to reduce the storage size and get easy transmission. The process of this video coding is proceeding by using empirical wavelet transform. The encoding process contains secure and the reconstruction process contains reverse process. In our approach, the video coding processing is done by reducing bit rate. The proposed approach contains basically three methods. First approach is the video coding of EWT and H.264 coding, Second approach is the video coding of EWT and USPIHT coding. Last approach is the video coding using EWT and the combination of H.264 and updated SPIHT coding. The histogram based contrast enhancement (HBCE) is used for image enhancement in the reconstruction process. The output of our proposed approach shows better results and is very reliable.

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# A Review on Green Innovation Practices and Its Impact on Various Performance Levels

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**Abstract**—The organizations voluntarily undertake initiatives, programmes, and practices to reduce the negative impact on the environment can be called as “proactive” or “committed” environmental behaviours (Berry and Rondinelli, 1998; Hunt and Auster, 1990). Green Innovation (GI) is the best way to minimise environmental pollution, improve the environmental performance of a company and to adhere to legislation and regulations but the company needs to be a leader and not a follower (Seman, et al. 2012). The conceptual paper is based on the detailed review of the literature on two major types of green innovation such as Green Product and Green Process Innovation and the impact of these prominent green innovations on various levels of performance.

**Keywords**- Green Innovation, Green Product Innovation(GPDTI) and Green Process Innovation(GPRSI)

## I. INTRODUCTION

Thompson (1992) states that innovation is a process that translates the idea into a product or service to meet new market demand. (Porter, 1991; Porter and Van Der Linde, 1995) distinguished green innovation from a conventional innovation in such a way that the latter is developed not particularly to address environmental challenges, but the former is initiated to meet the green requirements of a regulatory body or the green concerns of the target customers. Rennings (2000, p. 322) argued that green innovation is “putting emphasis on innovation toward sustainable development.” A study by Kurapatskie and Darnall (2013) highlights that companies develop new green products and processes enjoy more benefits than companies which just modify its existing products and processes. Green innovation can help firms to avoid environmental protests or penalties, increase productivity, enhance corporate reputation, foster an image of green awareness, develop new markets, and achieve first-mover competitive advantages (Chen et al.2006; Mu et al. 2009; Lau et al. 2010). Additionally, Zhu et al. (2012) verified that eco-innovation practices can help firms minimise waste and promote brands, which in turn stimulates market share and new business opportunities. It is commonly recognized that environmental innovations provide an important key to sustainability (Frenken and Faber, 2009) and reduces the environmental impacts of the firm and as well as enables them to achieve eco-targets and environmental benefits (Bernroider, 2002).The following section focus on two major types of green innovation , that is as Green Product and Green Process Innovation .

## II.GREEN PRODUCT INNOVATION (GPDTI)

A product is considered as a conventional or competing product in “greenness” if it imposes less burden on the environment in terms of energy and raw materials requirements, air emissions, waterborne effluents, solid waste and other environmental releases incurred throughout its product life cycle (Greenpeace

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## Enhancing security in IoT healthcare services using fog computing

**Jeethu Mathew** et al.

### Abstract

*Internet of Things (IoT) is the networking of physical devices that are both connected and smart. With the advancement in IoT devices particularly in healthcare sector, huge amount of data is collected from different sensors and all this data are transferred and stored in cloud. It becomes difficult to handle such huge amount of data in cloud specially the healthcare data where it requires real time data computation and storage. Security of the data is also major challenge in cloud. Fog computing is the answer to overcome the challenges. Fog nodes works at the edge side and enhances data security, accuracy, consistency and reduces the latency rate which is an important factor for application like medical data. Even though there are much advantages fog computing also faces some kind of security issues and challenges. Fog-enabled smart health raises a series of challenges in terms of efficient cooperation among healthcare devices, fog nodes, and the cloud server, as well as security and privacy issues.*

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