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DIFFERENT TYPES OF ANTIGEN PREPARATION FROM Aeromonas Hydrophila FOR HEALTHCARE

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ABSTRACT

The present analysis focuses on the effect of different types of antigens such as whole cell bacterial antigen, whole cell bacterial antigen with antiserum, heat killed antigen, heat killed bacterial antigen with antiserum and nucleotide antigen on the fresh water fish, *Catla Catla*. In this study pathogen decreases the body weight compared to normal fishes. Some notable changes were also noted in activity, growth, feed consumption and reproduction. It is concluded, that the pathogenic organism acts as biotic stress to the host animals. Analysis of immunogenicity of antigens against the fish *Catla catla* was estimated. The *Aeromonas hydrophila* produced β hemolytic pattern on the blood agar plate. In this study suggests preparation of effective antigen helps to raise serum against pathogen to develop concomitant immunity for economic development of fish farmers.

Keywords: Antigens, *Aeromonas hydrophila, Catla catla* and immunity.

INTRODUCTION

An antigen is a substance that is responsible for the production of specific antibody molecules when introduced into tissues of susceptible animals. A small site on antigen to which a complementary antibody may specifically bind is called an epitope. An immunoglobulin capable of specific combination with the antigen that causes its production in susceptible animals is called an antibody (Dhasarathan *et al.,* 2010). *Aeromonas hydrophila* is a primary pathogen (Esteve *et al.,* 1993), secondary pathogen (Joice *et al.,* 2002) and opportunistic pathogen (Dooley and Trust 1988 and Lio-po *et al.,* 1996) of a variety of aquatic (fish) and terrestrial animals, including humans.

COMPARISON OF OYSTER MUSHROOM NUTRITIVE VALUE GROWN AT PADDY STRAW AND PEAT SUBSTRATES

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ABSTRACT

The present study was conducted to evaluate different substrates (Paddy straw and peat) for establishment of yield performance of oyster mushroom. Mushroom samples taken from both paddy straw and peat straw were dried and analyzed various parameters. In this study found paddy straw substrate is having high efficacy to cultivate mushroom compared to peat substrates in fibre content. From this carbhohydrate value was high in peat substrate cultivated mush room. Protein content of the mushroom cultivated in paddy straw was (7.54 mg/g) less value, where as a compared to peat substrate mushroom (11.24 mg/g). Ash content seems high in peat straw grown mushroom i.e., 2.904 mg/g and 0.878 mg/g in paddy straw grown mushroom. Fibre content seems high in paddy straw reared mushroom (80.68 mg/g) compared to peat straw grown mushroom (74.29 mg/g). Current results also indicates there the studied mushroom have good nutritive value of human. From this study fibre content rich in paddy straw grown mushroom is best compared to peat substrates.

.Keywords: oyster mushroom, nutrition, paddy straw and peat substrate.

INTRODUCTION

The present study was conducted to evaluate different substrates for establishment of yield performance of oyster mushroom (*Pleurotus flabellatus*). The substrates were prepared from single or mixture of different agricultural waste materials supplemented with lime and water as additive to each substrate. The oyster mushroom (pleurotus) which is mostly cultivated and marketed in the North East. Oyster mushrooms are easier to grow and less cumbersome to process. The climatic conditions in the North East are favorable for its growth. The product is available mainly in two forms i.e. fresh and dried (Mueller and Gawley, 1983 and Indira *et al.*, 2010). The proposed unit can would sell 2000 kgs of fresh mushroom and 3000 kg as dried mushroom. Research studies have shown that it is an ideal food for people suffering from diabetics, heart ailments, hypertension and anemia. Mushrooms have been considered as a delicacy the world over. The oyster mushroom (pleurotus) which is mostly cultivated and marketed in the North East. Oyster mushrooms are easier to grow and less cumbersome to process.

ISOLATION AND ANTIBIOTIC RESISTANCE SCERRENING OF BACTERIAL ISOLATES FROM A FISH, *Carassius auratus*

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ABSTRACT

In the present investigation, the affected gold fish was obtained from the fish rearing farms and microorganisms were isolated from the organs such as muscle, gill, liver and intestine. The highest microbial load ($6.3 \pm 0.4 \times 10^7$ cfu g^{-1}) was observed in muscle tissue of the infected *C. auratus*. The lowest microbial load ($4.3 \pm 0.7 \times 10^4$ cfu g^{-1}) was found in intestine of the fish *C. auratus*. The percentage distributions of mycotic and bacterial isolates are observed. The biochemical characterization of the pathogenic isolates was performed and the microorganisms were identified up to the generic level. Based upon the antibiotic susceptibility test the five isolates such as *Escherichia coli, Aeromonas hydrophila, Staphylococcus aureus, Aeromonas salmonicida* and *Vibrio* sp. were selected and were administered to the healthy normal *Catla catla* fish and LC_{50} value was calculated. For the pathogens isolated from the diseased fish *C. auratus* the antibiotic susceptibility test was performed. About 5 isolates showed 100% resistant to the antibiotics used. Based on the results of lethal concentration and minimum inhibitory concentration test to the isolates, *A. hydrophila* was found to be highly antigenic to the fish *Catla catla and hence A. hydrophila strain was selected for preparation of antigen.*

Keywords: bacterial isolates, Antigen, MIC, antibiotics and biochemical analysis

INTRODUCTION

In the aquatic environment, fish are in constant interaction with a wide range of pathogenic and non pathogenic microorganisms (Subramanian *et al.,* 2007). Disease is prime agent affecting fish mortality, especially when fish are young (Sharma *et al.,* 2012). Pathogens which can cause fish

Enhancement Of Mushroom Cultivation And Analysis Of Nutritive Value Of Oyster Mushroom

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ABSTRACT

The present study was conducted to cultivate oyster mushroom (*Pleurotus flabellatus)* and evaluated nutritive values of mushroom. In nutritive analysis each gram of mushroom showed detectable value. lipid content was observed 0.439 mg per gram of sample. Carbohydrate value seems paddy straw reared mushroom where the value is 1.311mg. Protein value is found to be low in the paddy straw reared mushroom where the value is 7.54 mg. Ash content seems high in paddy straw grown mushroom i.e., 0.878 mg. Fibre content seems in the paddy straw reared mushroom where the value is 80.68 mg. protein content was observed 0.439 mg per gram of sample. In this study conclude that mushroom is a good source of nutrient especially rich in protein, edible fibre and minerals but not in lipid content. From this study suggests mushroom to lead a healthy and prosperous life".

Keywords: oyster mushroom, nutrition, cultivation and economy.

INTRODUCTION

Growing oyster mushroom is becoming more popular throughout the world because of their abilities to grow at a wide range of temperatures utilizing various lignocelluloses (Mueller and Gawley, 1983 and Indira *et al.*, 2010). Oyster mushroom (*Pleurotus* spp.) is a valuable food with high protein and vitamin contents and low fat content (Banik *et al.,* 2000). It is cultivated around the world: it was the third most popularly cultivated edible mushroom in 1997 after button mushroom (*Agaricus bisporus*) and shiitake (*Lentinu laedodes*) (Chang and Miles 2004). Oyster mushroom (*Pleurotus ostreatus*) is a common edible mushroom long cultivated in Asia. In nature, Pleurotus species live on parts of plants which are generally poor in nutrients and vitamins. China is the world's largest edible mushroom producer (Dinghaun and Xiaoyong, 2004). Oyster mushroom is cultivated around the world, especially in subtropical and temperate regions. It is a saprophyte that acts as a primary decomposer of woods especially deciduous trees, particularly beech (Phillips and Roger, 2006). Oyster mushroom can adapt better than other species of mushroom outside their place of origin (Chang and Miles, 2004). In addition, the production uses a wide array of agricultural and forestry waste products, including straw, corn stalks, sugar cane bags, coffee pulp (Aishah, and Rosli, 2013), sawdust, paddy straw, waste cotton, stalks, and banana leaves (Chang and Miles, 2004). All of these waste products could be used for Pleurotus mushroom production without the need for expensive processing methods and substrate amendments, although, in most cases, industrial scale cultivation

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SCREENING AND IDENTIFICAION OF ACTIVE PHYTOCHEMICALS COMPOUNDS FROM CLITORIA TERNATEA LEAVES

CHRISTINA ISAAC, VALIVITTAN, K. AND P. DHASARATHAN

Abstract

Preliminary phytochemical analysis revealed the presence of secondary metabolites in Clitoria ternatea samples was good. Clitoria ternatea leaves phytochemical screening were performed and recorded in Table 1. Ethanol extracts of Clitoria ternatea (leaves) was found to be different secondary metabolites compared to other solvents. Alkaloids were present in all solvent extracts except in butanol extract. Saponin is present in butanol, ethanol and aqueous extracts and is absent in remaining solvent extracts. Amino acids present in butanol and ethanol extract of Clitoria ternatea and are absent in hexane, chloroform and aqueous extracts. Flavonoids are mostly absent in hexane and chloroform extracts. However, it is found to occur in butanol, ethanol and aqueous extracts of the present study. The study revealed the polarity of the chemical composition of the leaves of Clitoria ternatea. In the present study, the Rf value of compound isolated from Clitoria ternatea by TLC method is given as; three spots from hexane extract (0.13, 0.17, 0.31), five spots from butanol extracts (0.03, 0.06, 0.90, 0.12, 0.15), six spots from ethanol extracts (0.03, 0.08, 0.11, 0.13, 0.17, 0.21), four spots from chloroform extracts (0.13, 0.18, 0.21, 0.33) and three from aqueous extracts (0.80, 0.18, 0.34). The proton NMR spectrum of the compound gave the following compound Octadecanoic acid. It is one unusual base pair present in Clitoria ternatea samples. It is one of the reasons for many of the biological characteristics of the samples. The compound of Clitoria ternatea have been found in vitro to be effective antimicrobial substances against a wide array of microorganisms.

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A Novel Technology To Prevent Premature Spoilage Of Milk And Shelf Life Extension Of Milk Using The Extracts Of Moringa Oleifera Lam.

Dhasarathan P, Keerthika B, Naavarasi N R, Ranjitsingh A J A

Abstract: Milk gets spoiled easily by microbes if it is not stored properly. To extend the shelf life of milk, the suppliers use different chemicals that are hazardous to infants in prolonged use. As an alternative method of preservation to extend shelf life the extracts of the plant Moringa oleifera Lam was added to raw and pasteurized milk and found effective to keep it unspoiled for a period of 5 hours and 11 hours respectively without refrigeration. The bioactive compound derivatives (R)-3-pyrrolidinol, 5- (p- aminophenyl) - 4- (p- tolyl) - 2- thiazolamine, 2'6'- Dihydroxyacetophenone and other phenolic compounds present in the extract were reported to be effective in arresting spoilage causing microbes and extending the shelf life of the milk. The use of bio-preservatives and their mechanism of action on the spoilage microbes promote a healthy life.

Index Terms: Raw milk, Pasteurized milk, Moringa oleifera Lam., Phenolic compounds, anti-oxidant property

1. INTRODUCTION

Milk and milk products forms an important constituent in human food. The milk gets spoiled easily and quickly if it is not properly stored. The journey of milk from cattle to consumer mouth needs adequate protection from exotic, acquired microbes from cattle and milk man zone and through easily deteriorating biochemical parameters (Shan-na Liu et al., 2011). So there is a need to extend the shelf life of milk before being used. To extend the shelf life and preventing microbial spoilage and biochemical changes like hydrogen per oxide formation , pH changes, acidity formation, microbial over loading, and organoleptic changes different strategies are applied for over several years (Datta and Deeth, 1999; Te Giffel and VanDerHorst, 2004; Krushna et., 2007 ; Gad and Salam, 2010 ; Chawla etal.,2011 ; Walkling-Ribeiro etal., 2011; Fernandez et al., 2013; Michael et al., 2013 and Modi etal.,2017). Of all the premature milk spoilage prevention strategies the use of safe natural products derivatives are found the most suitable one (Sivakumar and Dhanalakshmi, 2016 and Samah et al., 2019). Hence in the present study the extracts of the medicinal plant Moringa oleifera is tested to find its efficacy to inhibit microbial invasion and extending the shelf life of both raw and pasteurized milk for a considerable time before use.

2 MATERIALS AND METHODS

2.1 Plant extracts

The Moringa oleifera Lam. leaves (250 g) were washed using the distilled water and shade dried for a week for the removal of moisture content. After that the weight was reduced to 45 g. Then 25 g of dried leaves were weighed and pulverised into powder for extraction of bioactive compounds. Using sterile distilled water as solvent in a Soxhlet apparatus the aqueous extract was obtained, filtered, concentrated and stored in a brown glass bottle stored in a refrigerator at 4°C for further use.

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2.2 Preliminary phytochemical screening

The aqueous extract was tested for alkaloids, flavonoids, phenols, steroids, tannins, terpenoids, saponins, reducing sugars, volatile oils, carbohydrates and protein/amino acids using standard qualitative analysis.

2.3 Identification of compounds by GC-MS analysis

The phytochemical compound present in the extract was recorded using the GC MS analysis (Shimdzu GC-2010) and the results were compared by using Wiley Spectral library search programme.

2.4 Milk sample

The pasteurized milk (500 ml) was collected from Aavin brand, of Tamilnadu. The raw milk was collected directly from the cow sheds found in the nearby village regions of Periyapalaiyam, Thiruvallur district, of Tamilnadu

2.5 Determination of inhibition zone

The LB agar, Potato Dextrose Agar and MRS agar were prepared and sterilized at 121 for 20 minutes using autoclave for plating of microbes associated with the pasteurized and raw milk. The solidified agar plates were spread with the milk sample of 100µl. These plates were incubated at 35 for 24 hours for the observation of the microbial colony formation. The developed bacterial and fungal colonies were isolated and identified. They were found to be Lactobacillus sp., Bacillus sp. and Aspergillus colonies. The isolates were stored for further study. To find out the optimum dose of Moringa extract that inhibits the bacterial and fungal colonies effectively empty discs prepared using sterile Whatman filter paper were loaded with different doses of Moringa leaf extracts (25%, 50% and 75%) and were placed over the agar plates containing the bacterial and fungal swabs .The effective dose that inhibit the bacterial and fungal colonies was found to be 75 % dose of Moringa extract .The 75% dose of the extract was mixed with 100 ml of raw and pasteurised milk at room temperature and stored outside for 10hrs. The sample taken from raw and pasteurised milk for every 1h and measured pH using pH meter The microbial growth

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Exploring the Horizons of Ephrin B2 Receptor for Combating *Paramoxyviridae* Infection

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Abstract:- Nipah virus belongs to the family of Paramyxoviridae. It is a deadly virus which needs to be treated using a drug of increased efficacy and reduced toxicity. The main objective of this research is to identify the suitable drug molecule which could inhibit the escalation of this infection within the biological system susceptible to the infection. For this, bioinformatics tools were being exploited over the due course. Through literature survey, it was identified that the Nipah virus invades the susceptible human cell by adhering to the Ephrine B2 receptor through the viral phosphoprotein and glycoprotein moieties respectively. The novel approach of blocking the Ephrine B2 receptor using an organic compound is proposed in this paper to be effective in preventing the emerging Nipah virus. Further the docking studies of alkaloid Berberine with the Ephrine B2 receptor B and D chains in particular gave the docking energy as -5.65 kcal/mol which reveals a significant interaction between the target protein and the ligand molecule. The ligand further obeys Lipinski's rule of 5, which provides Berberine therapeutic advantages in treatment of this deadly disease.

Keywords:- *Berberine, Increased Efficacy, Molecular Docking, Lipinski's Rule.*

I. INTRODUCTION

Ephrine B2 which is a transmembrane receptor which is approximately of 40kda of size, belongs to the class of Eph receptors. The participation of Ephrin-B2 in a range of physiological systems, including vascular, lymphatic, neuronal, and renal development, neurotransmission, synaptic plasticity, and tumor metastasis respectively amongst the several inevitable existing functions. Ephrin-B2 along with its cognate receptors B3 and B4 are expressed in complementary fashion on adjacent cells. The combination of forward and reverse signaling is central to the tissue development and remodeling functions of Ephrin and Eph associated proteins.

The *Hendra* and *Nipah* viruses (HeV and NiV) are prominant members of the_*Paramyxoviridae* family [1]. The initial cases were detected in Australia in 1994-95 and Malaysia in 1998-99. *Henipa* viruses have been transmitted to humans through several sources [2]. *Henipa* virus interactions with target cells are mediated by its 75 kDa glycoprotein moiety attachment and 70 kDa fusion proteins attachment respectively, where both of them are evident prospects for membrane fusion. Recently Ephrin-B2 has been identified as a functional cellular receptor for Hendra and *Nipah* viruses [3].

Though several other moieties could perhaps contribute towards HeV and NiV fusion permissiveness there exists a strong correlation between Ephrin-B2 expression patterns and the tropism of *Henipa* viruses. Further, the Ephrin-B2 receptor is observed to establish conservative paradigm in advancement of the infection amidst other prone individuals.

Berberine being phytochemical of interest in the present study is a quaternary ammonium salt from the protoberberine group of benzylisoquinoline alkaloids found in plants including Berberis (e.g. Berberis vulgaris – barberry, Berberis aristata – tree turmeric, etc) [4]. Berberine is prominently found in the roots, rhizomes, stems, and barks in those plants reported to contain the phytochemical. Berberine was anciently used in China as a folk medicine. In accordance with the collaborative analysis of the existing mechanism and our novelty, the receptor moiety was selected as the Ephrin B2 and the compatible ligand molecule as Berberine for the *in-silico* studies.

II. MATERIALS AND METHODS

A. Sequence Analysis

The method of deciphering the treatment of *Nipah* virus in this case is seen to be target based drug discovery approach. This was concluded after thorough study of the mechanism of evasion of the pathogen into the host cell. To study the infection caused by it, the sequence has been retrieved from the NCBI database [5]. The accession number of the *Nipah* virus genome is AF212302.2. BLAST [6] is used to identify similar library sequences for sequence analysis.

B. Receptor Localisation

The position of the Ephrin B2 receptor in the host cell was analyzed by the exploitation of the tool-CELLO [7] (http://cello.life.nctu.edu.tw/). This tool enables in predicting the position of receptor in various parts of the cell. This tool is very vital in determining the route of administration of the drug moiety.

C. Receptor Analysis

The structure of the receptor, EphrinB2 was retrieved from the PDB database [8]. The Protein Data Bank (PDB) is a database for the three-dimensional structural data of large biological molecules, such as proteins and nucleic

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Screening of Novel Lead Compound from *Carissa Carandas* against Breast Cancer using *In-Vitro* and *In-Silico* Methods

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Abstract

Breast cancer is one of the perilous cancers and it is the second death causing cancer that occurs mostly in women. This work aimed at determining the active compound from *Carissa carandas* fruit, which proved to control the growth of cancer cells and this fruit is abundantly found in Tamilnadu, India. The ethanolic fruit extract was subjected to phytochemical and GC - MS analysis. Free radical scavenging and anticancer activity of fruit was analysed by DPPH (1, 1-Diphenyl-2- picrylhydrazyl) and MTT (3- [4, 5-dimethylthiazol-2-yl]-2,5-diphenyl tetrazolium bromide) assays respectively. The IC50 concentration of the ethanolic extract was 86.7308 (µg/ml) against MCF-7 cell lines. Drug likeliness was analysed based on Lipinski's rule of five, where 11 out of 24 compounds were selected as ligands. IDC (Invasive Ductal carcinoma) breast cancer protein- Aromatase was selected as target which is an estrogen synthesizing enzyme. It was docked with ligands and the efficient lead molecule against this target was selected based on lowest binding energy value which was found to be 2-Furancarboxaldehyde (-114.56 Kcal/mol). This showed that unripe fruits of *Carissa carandas* could be exploited to get promising lead molecules against IDC breast cancer.

Keywords
Anticancer, Antioxidant, Aromatase, Breast cancer, *Carissa carandas*

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INTRODUCTION:

Breast cancer is the most common type of cancer, diagnosed in women and it is a disease in which malignant (cancer) cells form in the tissues of the breast [1]. There are several types of breast cancer. IDC(Invasive Ductal Carcinoma) is the most common type of breast cancer and it begins in the milk ducts of the breast and penetrates the wall of the duct, invading the fatty tissue of the breast and possibly other regions of the body [2,3].Estrogen is produced locally from circulating inactive steroids and plays major roles in the proliferation and development of breast cancer (hormone-dependent) in postmenopausal women and aromatase promotes the production of estrogen [4, 5, 6]. The level of expression of the Estrogen receptor in invasive ductal carcinoma is more. It is concluded, IDC is an estrogen positive receptor carcinoma [7], so Aromatase inhibitors appear to be more effective in postmenopausal women than in premenopausal women due to the fact that the major source of

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Morinda tinctoria Roxb. as potential source of biopesticides against the cotton bollworm Helicoverpa armigera

Praveena A. and Sanjayan K.P.

Page No: 118-124

Abstract: The cotton bollworm Helicoverpa armigera is a well-known pest in many agricultural cropping systems worldwide. The extensive and widespread use of synthetic insecticides against H.armigera has led to the development of resistance against almost all commercially used compounds including new insecticides. The underlying possible effects of Morinda tinctoria against H.armigera were investigated based on the biological and biochemical studies. Root-bark and fruit extracts were tested for mortality of 3rd instar larvae of H.armigera at concentrations of 1, 3 and 5%. 1% ethyl acetate fruit and root-bark extract were the most potent bringing the maximum mortality.

The maximum feeding deterrence index of 79.832% was observed in the 5% ethyl acetate extract of root-bark. A significant percentage of the pupa failed to emerge as adult and the emerged ones displayed structural abnormalities in the form of deformed wings. The adults that emerged from larvae fed with extracts produced lesser number of eggs than the control group. There was a decrease in the activity of Carboxylesterase and Acetylcholinesterase compared to the control. Protease activity was least affected by the extracts of the fruit and root bark.

Full Text

Varietal identification in rice (Oryza sativa L.) hybrids and parental lines using biochemical and molecular markers

Kumar Sunil, Singh Shailaja, Misra Pragati, Shukla Pradeep Kumar, Rai Prashant Kumar and Pradhan S.K.

Page No: 125-132

Abstract: Limitations in the morphological variation among the majority of rice varieties due to narrow genetic base make it compulsory for the development of expeditious and reliable methods or varietal identification categorically for those working in seed certification and quality maintenance. Identification of felicitous rice genotypes is of prime paramountcy to ascertain quality seed required for achieving ecumenical victuals demand. Rice hybrids such as NARENDRA SANKAR DHAN 2, RAJALAXMI and AJAY their parental lines such as IR 58025A, NDR3026-3IR, CRMS32A, IR42266-29-3R, CRMS31A and IR42266-29-3R were taken for the present experiment. Albeit, unifications of different rapid chemical tests were subsidiary in identification of individual genotypes.

However, all these cultivars were identified by SDS-PAGE and hence could be utilized as a puissant implement to identify every genotype in a short period of time at primary functional level. A set of 16 SSR markers distributed across the genome was utilized for screening the rice hybrids and their parental lines. Eight primers namely RM202, RM234, RM228, RM6100, RM258, RM18, RM335 and RM334 could not differentiate among the four hybrids, however, other eight primers i.e. RM202, RM234, RM228, RM6100, RM258, RM18, RM335 and RM334 engendered paramount differences, hence, were taken for further analysis. The cluster analysis predicated on Jaccard's kindred attribute co-efficient utilizing UPGMA grouped eight parental lines into two clusters. Within the cluster, the parental lines of hybrids shared a mundane genetic background. The eight parental lines along with their hybrids were clustered with reverence to the genotyping data utilizing the microsatellite markers. It could limpidly distinguish two hybrids NDRH2 and Rajlaxmi and their parents into two distinct clusters.

Full Text

Antibacterial activity of biogenic silver nanoparticles synthesized using Phycobiliproteins of Anabaena iyengarii

SCREENING OF E-WASTE DEGRADING BACTERIA FROM CHOSEN DUMPYARD AT CHENNAI, TAMILANDU, INDIA

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ABSTRACT

E-waste remediation using bacterial organisms are ecologically effective way to protect environment. In this study, bacterial organism enumerated from as 1.41 x 10^7 CFU/g in Kodungaiyur dump yard samples. From this colonies morphologically different ten bacterial organisms isolated to degrade e-waste and named as as KAIKT1, KAIKT2, KAIKT3, KAIKT4, KAIKT5, KAIKT6, KAIKT7, KAIKT8, KAIKT9 and KAIKT10 respectively. Degradation ability of isolated bacterial organisms, KAIKT 4, KAIKT 5, KAIKT 8 and KAIKT 9 were effective compared to others. KAIKT 4 and KAIKT 9 degrade mercury and lead as 50 and 33 % respectively. The isolated strain KAIKT 8 was showed high (87.5%) solubilization of battery wastes. From this study confirmed gram negative organisms were potential to degrade e waste compared to gram positive organisms

Keywords: Microbial remediation, isolation, e waste degradation and screening.

INTRODUCTION

E-waste is an important global environmental and health issue. Combustion from burning e-waste creates fine particulate matter, which is linked to pulmonary and cardiovascular disease, digestive, neurological, respiratory and bone problems. The elemental form of mercury evaporates into the atmosphere and precipitates into ground water through rain (Qianrui *et al.,* 2004).Bacteria convert mercury to methyl-mercury in soils which goes to the bottom of aquatic food chain and accumulates in animal fatty-tissues (Clarkson and Magos, 2006). Fetuses and young children are more susceptible to mercury toxins which affect the nervous system and cause neurological disorder, cognitive debilities, skin irritation, memory disorder, language, fine motor as well as spatial skills losses (Richard, 2009). According to Macy *et al.,* (2000) the exposure to different levels of barium leads to barium poisoning and affects nervous system and heart (Lim and Schoenung, 2010). Incineration of electronic waste is cheap but affects the environment severely (Sharma *et al*, 2012). Recycling reduces the amount of greenhouse gas emissions caused by the manufacturing of new products (Linda, 2010).Many microorganisms have the potential to degrade and detoxify metals in the environment through different processes such as adsorption, methylation, demethylation and oxidation/reduction reactions (Bruins *et al.,* 2000). Bacteria precipitate metals within their cells into ions (Podda *et al.*, 2000). They also degrade metals to produce chemical substances called siderophore in the form of phenols and catechol as their process of ion uptake (Xu *et al., 1998,* Rensha *et. al.*, 2002). These genes are wide spread in gram positive and negative bacteria and are located in plasmids, the

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Utilizing *Borassus flabellifer* sprout peel sugars by *Pseudomonas fluorescence* for degradation of textile effluent

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Abstract

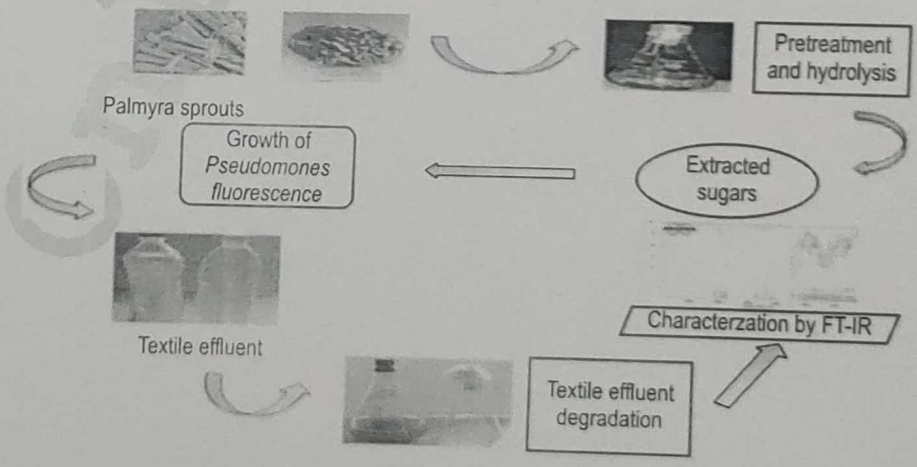
Aim : The present investigation deals with the extraction of sugars from tuber peels of *Borassus flabellifer* and their subsequent utilization for the growth of a bacterial isolate. The study also aims to degrade the textile effluent using *B. flabellifer* sprout peel sugar supplemented bacterial isolate.

Methodology : The isolate was screened from a textile effluent and was identified as *Pseudomonas fluorescence*. The sugar peels were pretreated by dilute acid hydrolysis and extracted sugars were used as supplement for the growth of *Pseudomonas fluorescence*. The textile effluent was treated with the bacterial isolate for degradation. The decolorization and degradation was monitored using UV-Visible spectrophotometry, Fourier Transform Infrared (FT-IR) Spectroscopy and Gas Chromatography With Mass Spectrometry (GC-MS).

Results : *B. flabellifer* sprout peel sugar was supplemented as a macronutrient to support the growth of *Pseudomonas fluorescence* for the degradation of textile effluent. Higher decolorization efficiency (95%) within 7 days under aerobic condition at pH- 7.0 and temperature 35°C was achieved.

Interpretation : The present study showed that the growth of *Pseudomonas fluorescence* was possible in tuber peel extracted sugars which was used as a carbon source. The bacteria grown in tuber peel extracted sugars was able to decolorize and degrade the textile effluent.

Key words : *Borassus flabellifer*, Degradation, Extracted sugars, *Pseudomonas fluorescence*



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(RESEARCH ARTICLE)

Comparative study of bioelectricity generation by microbial degradation of organic wastes using microbial fuel cell

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Abstract

In the present project, we investigate to generate bioelectricity from organic wastes such as *Citrus sinensis* peel slurry and *Oryza sativa* waste water and characterize the electrogenic bacteria responsible for the generation of bioelectricity. The maximum voltage of about 0.8V was generated from *Citrus sinensis* peel slurry in 16 days, whereas 0.642V was generated in a period of 14 days from *Oryza sativa* waste water. In series connection of microbial fuel cells, voltage of 2.850V was measured. Four electrogenic bacterial isolates were obtained from the anode of microbial fuel cell and various biochemical characterization tests were performed. The effect of addition of different concentrations of glucose to the anode chamber of microbial fuel cell along with the organic wastes was analysed and 3g/l was found to be the optimum glucose concentration to increase the performance of microbial fuel cell. The output from the microbial fuel cells can be implemented to power low power consuming devices and biosensors.

Keywords: Bioelectricity; Microbial fuel cell; Electrogenic bacteria; *Citrus sinensis* peels; *Oryza sativa* waste water.

1. Introduction

Nowadays the world is observing an energy crisis due to huge energy demand and limited resources. Combustion of non-renewable energy emits a lot of greenhouse gas like carbon dioxide, which has shown alarming consequences to the environment [1]. An alternative strategy is direct conversion of sugars to electrical power [2]. Microbial fuel cells (MFCs) are emerging as promising technology for the treatment of wastewaters [3]. Microbial fuel cells (MFCs) directly convert biodegradable substrates to electricity and carry good potential for energy- positive waste water treatment [4]. Microbial fuel cells (MFCs) are devices that can use bacterial metabolism to produce an electrical current from a wide range organic substrate [5]. Recently great attentions have been paid to microbial fuel cells (MFCs) due to their mild operating conditions and using variety of biodegradable substrates as fuel [6]. The added advantage of using MFC technology for different effluent treatment is that several bio-based processes include removal of biochemical and chemical oxygen demand, nitrification, denitrification sulphate removal and removal of heavy metals can be carried out in the same bioreactor [7]. A typical MFC consists of anode and cathode compartments, which are separated by a cationic proton exchange membrane. Salt-bridge is the economic alternative to highly priced proton exchange membrane in the construction of a microbial fuel cell [8]. To improve the performance of microbial fuel cells (MFCs), the biocathode electrode material of double-chamber was optimized [9]. For practical applications of MFC technology, the design as well as the process of manufacturing and assembly, should be optimized for the specific target use [10]. A number of microorganisms having electricity generating efficiency such as *Geothrix* species and *Shewanella* , can produce their own electron shuttles. *Geobacter* species are advantageous due to the presence of the ability to directly transfer electrons to electrodes, when competing for space on the anode of sediment microbial fuel cells [11]. *Shewanella oneidensis* is able to conserve energy for growth by reducing a wide variety of terminal electron acceptors during anaerobic respiration, including several environmentally hazardous pollutants [12].

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ANTIBACTERIAL AND ANTIFUNGAL ACTIVITY OF VARIOUS PLANT EXTRACTS AGAINST SKIN INFECTIOUS BACTERIAL AND FUNGAL PATHOGENS

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ABSTRACT

The plants as a whole or the parts of the plants has the effect in inhibiting the microbial growth and activity. The current study aims at analysing the antibacterial and antifungal activity of various plant extracts against the selected bacterial and fungal strain such as *Staphylococcus aureus* and *Candida albicans* respectively. The methodology involves the extraction of medicinal plants such as *Olea europaea* (Olive oil), *Aloe barbadensis miller* (Aloe vera), *Ocimum tenuiflorum* (Tulsi), *Allium sativum* (Garlic) and *Zingiber officinale* (Ginger) using DMSO (Dimethyl Sulfoxide) by various extraction method. Determination of zone of inhibition of various extracts at different concentration by agar well diffusion method. For antibacterial activity the results show the zone of inhibition occurs at maximum concentration i.e., 150µl in Garlic extract, 100µl in Tulsi extract, 200µl in Ginger and Aloe vera extract, 150µl in Olive oil extract. For Antifungal activity the results show that the zone of inhibition occurs at maximum concentration i.e., 100µl in Garlic extract, 150µl in Ginger extract, 100µl in Tulsi, 150 µl in Aloe vera extract and 200µl in Olive oil extract. And also, combinations of various plant extracts in different concentrations were analysed and the zone of inhibition was found to be 50mm against *Staphylococcus aureus* and 41mm against *Candida albicans*. The GC-MS analysis of three plant extracts (Tulsi, Ginger, Garlic) revealed the presence of various bioactive compounds responsible for the antibacterial and antifungal activity.

KEYWORDS: Agar well diffusion, Antibacterial, Antifungal, *Candida albicans*, *Staphylococcus aureus*, *Ocimum tenuiflorum*, *Zingiber officinale*, *Allium sativum*, *Olea europaea*, *Aloe barbadensis miller*.

INTRODUCTION

Human skin, the outer covering of the body, is the largest organ of the body. It also constitutes the first line of defense. Skin and Soft tissue infections (SSTIs) encompass a wide spectrum of inflammatory diseases of the skin, subcutis, fascia and muscles. Skin and Soft issue infection involve microbial invasion of the skin and underlying tissues. They have variable presentations, etiologies and severities. The challenge of SSTIs is to efficiently differentiate those cases that require immediate attention and intervention, whether medical or surgical, from those that are less severe. Approximately 7% to 10% of hospitalized patients are affected by SSTIs, and they are very common in the emergency care setting [1]. The skin has an extremely diverse ecology of organisms that may produce infection. SSTIs include impetigo, folliculitis, furunculosis, carbunculosis, and trauma-related wound infections. Skin diseases are numerous and a frequently occuring health problem affecting all ages from the neonates to the elderly and cause harm in number of ways. Maintaing healthy skin is important for a healthy body. The use of plants is as old as the mankind [2]. Skin infections are caused by bacteria, fungi, parasites. Skin infections are caused by variety of bacteria, the most common types being *Staphylococci* and *Streptococci*. Bacteria may infect the topmost layer of skin, the follicles, or the deepest layers of skin. If not treated correctly it may become severe and spread throughout the body. The rate of fungal infection is increasing rapidly, and pathogenesis of their species is is poorly understood. Among fungi, *Candida* species are the major cause of morbidity and mortality worldwide and thus represent a serious threat to public health. *Candida* species can cause a variety of infections from mildest to the most severe being Candidemia, the most frequent hospital infection accounting for up to 15% of bloodstream infections. *Candida* species are the causative agents in 50 -70% of the systemic fungal infections.

Green Synthesis of CuO Nanoparticles from *Mirabilis jalapa* and In Vitro Evaluation of Antibacterial, Anti-Inflammatory and Wound Healing Activity

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ABSTRACT

The present study aims the green synthesizes of copper oxide nanoparticles by using *Mirabilis jalapa* as leaf extract to analyze the biological properties by using in vitro methodologies. The biological synthesis carried by mixing methanolic leaf extract with copper sulphate pentahydrate as precursor. The copper oxide nanoparticles were confirmed by Double beam UV-visible spectroscopy in which high absorbance peak was obtained at 240nm. Then, characterized by Fourier-Transform Infra-Red spectroscopy in which the functional groups present were identified in an absorbance range of 650 cm^{-1} to 3500 cm^{-1} using Happ-Genzel apodization and Scanning Electron Microscopy identified three dimensional images of nanoparticles and marked at a magnification of 41.0 kx. The nanoparticles evaluated by in vitro methodologies such as, agar disc diffusion assay for antibacterial activity, inhibition of protein denaturation assay for anti-inflammatory activity and in vitro wound healing assay in Vero cell lines to test wound healing activity.

Keywords:
Antibacterial activity, Anti-inflammatory activity, Copper oxide nanoparticles, *Mirabilis jalapa*, Wound healing activity.

Introduction

Mirabilis jalapa is commonly known as the Four O'clock plant, Marvel of Peru belongs to a family of Nyctaginaceae [1]. This plant is considered as marvel since it contains an efficient biological activity such as antibacterial, antifungal, antioxidant, antidiabetic, anti-inflammatory, wound healing, etc. This plant is a widely used medicinal herb since the various parts of the plant were used for treating diabetes, muscular pain, diarrhea, dysentery, kidney infections, inflammation, skin infections, indigestion, and several other ailments [2]. The leaves are used by mashing and boiling to reduce inflammation and treat abscesses, leaf juice is used to treat wounds. The leaves when crushed and mixed with salt can treat sprain, bruise, amenorrhea and dysmenorrhea in women. These plant parts not only speed up the healing process but also acts as a pain reliever [3]. *Mirabilis jalapa* is used as medicinal plant traditionally due to the presence of some biomolecules with important pharmacological properties and those biomolecules are terpenoids, true alkaloids and arabinose [4].

Copper oxide nanoparticles (CuO NPs) appear as a brownish-black powder and possess various properties such as, biological property, antibacterial, anti-inflammatory properties etc. They are used in anti-cancer coatings, textiles, and plastics because they act as efficient antibacterial agents [5]. This biological synthesis of nanoparticles is rapidly developing, eco-friendly, easy technology and also proven to be more pharmacologically active than the chemically synthesized nanoparticles [6]. Nanoparticles are characterized by using several methods as Scanning Electron Microscope (SEM) is an important technique for surface investigation of nanoparticles, Ultraviolet-visible (UV-Vis) spectroscopy for identification, characterization, studying and quantitative analysis of nanoparticles, and Fourier Transform Infra-Red (FITR) spectroscopy collects all wavelengths simultaneously and scans at once [7].

Copper nanoparticles (Cu NPs) shows the high antibacterial effect when compared with other metallic nanoparticles. The Antibacterial activity was analyzed against the *Staphylococcus aureus* a common bacterial organism [8]. Anti-inflammatory properties of nanoparticles are applicable for the treatment of inflammation with reduced side effects, drug designing and targeting in the food and cosmetic industries. Nanoparticles perform a variety of functions in wound therapy as to aid wound closure it possesses intrinsic characteristics and they act as delivery vectors for therapeutic agents. Vero cell lines were used for wound healing assay which is most commonly used cell line for wound healing assay at fibroblast stage [9].

Literature Review

The phytochemical properties of the entire plant and uses of the plant parts such as decoction of the entire plant was used as oral medicine to treat kidney infections due to the bioactive components that cures the ailment and relieves inflammations and the leaves were widely used for treating dermatological infections such as wound, scars, burns and allergies was reported by Manjit et.al, (2012).

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Combitorial effect of *Lactobacillus acidophilus* and *Brevibacillus brevis* as biopreservative to extend shelf life of curd

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ABSTRACT

Curd is a fermented product of milk rich in probiotic microbes and it is used as an important component in human food. Prolonged storage in ambient temperature promotes multifold increase of spoiling microbes and converts it in to a highly acidic product with unpleasant odour and rejection. To overcome this issues and to enhance the shelf life period at ambient temperature starter microbial inoculums plays a role .*Bacillus brevis* (MMI strain) a new isolate from curd and yoghurt was combined with commercial probiotic starter strain *Lactobacillus acidophilus* in different ratios and used as starter culture to ferment raw and pasteurized milk in the curd formation. *L acidophilus* and *B brevis* mixture in the ratio 1:1(v/v) was found to yield a good quality curd with a short curdling period without any whey formation. The acidity of the curd was 0.45% to 0.64% and P^H ranged between 6.95 - 6.61 during the storage for 0 – 144 hours. The microbial count ranged between 10 - 342 10^8CFU/ml, during 0 - 144 hours. The shelf life, taste and sensory qualities of curd developed from raw and pasteurized milk by combining , and *B .brevis* was well protected in ambient temperature till 5 days. The present report will ensure the commercial availability of the curd for an enhanced shelf life period.

Key words: *B .brevis*, *L. acidophilus*, pasteurized milk , curd , dairy products.

INTRODUCTION

Enhancing the stability and shelf life of food using microflora is an innovative approach in the preservation of foods and beverages. The bio-preservative microbes prevent premature spoilage by extending the shelf life and safety of food products (Lianou et al. 2016) Food products get spoiled due to the initial contamination of the product during production, harvesting, post harvesting, processing and distribution. Further endogenous factors like P^H, water activity and substrate and extrinsic influence from temperature relative humidity and atmosphere are also counted for food spoilage (Batt 2016).

Microbial spoilage of milk and dairy products is an area of great concern. To decontaminate milk and , probiotic microbes mostly lactic acid bacteria (LAB) serves good. They not only create unfavorable environment for most spoilaging microbes but also exerts probiotic role (Griffth & Ro-beiro 2012).Lactic acid bacteria produces bacteriocin which helps to control pathogens in milk yogurt and cheeses (Silva et al. 2018). The LAB comprises Gram – positive, non-sporulating, anaerobic or facultative aerobic bacilli and cocci primarily of the genera *Lactobacillus, Leuconostoc, Pediococcus* and *Streptococc*us.

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Research Article

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Epidemiology of urinary tract infection in south India

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Abstract

Urinary tract infection is one of the infectious diseases affecting both genders. The causative microbial pathogens invade the urinary tract tissues extending from the renal cortex to the urethral meatus. The prevalence of drug resistant microbes in urinary tract infected cases is a major problem to solve. With this background the epidemiology of urinary tract infection among the population of Kanyakumari District, South India was studied. For the present study medical practitioners suspected cases visiting for clinical evaluation in a major clinical laboratory were chosen as samples. In a period of 6 months observation a total of 1824 cases were subjected to various clinical analysis. Among them 1029 were females and 795 were males. A clinical examination of the suspected cases showed culture positive in the samples taken from males (37.23%) and females (37.99%). The age wise study of the culture positive cases indicates that the UTI infection occurs from infants (1 month) to elderly people (90-100 years). In the study area the percentage of UTI is common in women in the reproductive age and post-menopausal stage. Diabetic mellitus prevalent in post-menopausal women has a link with UTI incidence. In the elderly aged male's diabetes and prostrate problem enhances UTI. The pregnant women and newly married women in the age group 21-30 are more prone to UTI. The present study also reports pediatric UTI in both genders. Lifestyle changes, poor personal hygiene, nutritive problem, catheter use, unclean baby napkins and immune deficiency were identified to be the factors favoring UTI in the study area. An analysis of UTI positive culture showed the presence of *Escherichia coli, Klebsiella pneumoniae, Staphyllococcus saprophyticus, Margonella margonii, Streptococcus sp, Staphyllococcus aureus, Enterococcus sp, Proteus vulgaris, Chromobacterium violaceum, Serratia spp* and the fungi *Candida sp.*

Introduction

Urinary tract infection (UTI) is a contagion among men and women but the incidence is found high among women due to their biological conditions [1]. In the urino-genital system, the output from kidneys is eliminated and wastes are filtered in urinary tracts. The urinary tract has an upper and lower part. This filter tube of human system often gets affected by bacterial, fungal and viral infections. However, the bacterial infection is predominant than the other two microbes [2]. UTI infection exhibits a variety of symptoms including mild burning micturition, bacteremia, sepsis and even death [3]. It is reported that UTI is affecting both genders but women in the age group 15-44 are more prone to this infection [4]. UTI infection is global and in U.S more than 150 million cases are reported every year and the economic burden is more than 6 billion [5]. About 40% women and 12% of men suffers with UTI infection at least one time in their lifetime. But recurrent infection is also possible [1] of the different etiological agents the UTI causing bacteria may invade due to pregnancy, sexual intercourse, and family history [6]. The infecting bacteria enter the otherwise sterile urine and begin to grow. It usually develops at the opening of urethra and then spreads to the urinary tract. It is reported that the bacteria *Escherichia coli* is the causative agent [7].

In women sexual activity is the major cause up to 90% of bladder infection. This is common in the initial period of marriage and so it is called "honeymoon cystitis". Further improper wiping suppressed immune system, Urinary catheter diabetes, unhygienic public toilets, birth control devices and family history may be other reasons (WWW. kindney .org/store). About 80-90 percent of UTI is caused by a single type of bacteria [7].

Of the different types of urinary tract infection, cystitis (lower urinary tract infection) and pyelonephritis (upper urinary tract infection) are the major problems. For lower urinary tract infection, the common symptoms include inflammation and irritation in the lining of urethra and bladder, burning sensation or pain while urinating. More frequent urination and often with only a small amount of urine, sensation of having to urinate urgently, cloudy, bad smelling, or bloody urine, lower abdominal pain and mild fever. For upper urinary tract infections, the frequent symptoms include, high fever, nausea and vomiting, shaking chills, pain in back or one side of waist. In the children fever, vomiting, loss of bladder control sleeping mode is common symptoms. In the elderly fatigue is common due to UTI. Because of all these health issues, an attempt has been made to evaluate the prevalence of UTI among the population in Kanyakumari district of Tamil Nadu where women education is high. Further medical awareness is also high in this district.

Material and methods

Sampling

For the study 1824 cases with suspected urinary tract and related problems referred by medical practitioners to Vivek Clinical

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Key words: *UTI, bacteria, diabetes, infection, Kanyakumari*

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In-vitro Anti-inflammatory and *in-silico* Anti-aging Properties of *Psidium guajava* Leaves

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ABSTRACT

The present study has been aimed to evaluate the anti-inflammatory property of *P. guajava* leaves by *in-vitro* using HRBC membrane stabilization method and anti-aging potential by *in-silico* method using AutoDock. The anti-inflammatory and anti-aging activity of leaf extracts of *Psidium guajava* collected from North Chennai region, India were evaluated in the present study. The *in-vitro* method showed significant anti-inflammatory property and anti-aging potential by binding with the target. The maximum membrane stabilization depicting the anti-inflammatory activity of *P. guajava* extracts was found to be 50% at a dose of 750 ug/ml. The effect of ascorbic acid from *P. guajava* leaves extract for preventing skin aging showing minimal binding energy for binding ligand (ascorbic acid) with the target protein (AP-1) was observed.

KEY WORDS: *PSIDIUM GUAJAVA*, ANTI-INFLAMMATORY, HRBC MEMBRANE STABILIZATION, ANTI-AGING, DOCKING.

INTRODUCTION

Medicinal plants have a key role in combating human health issues since the Stone Age. They act as restorative, defensive and supportive agents for human body. The World Health Organization (WHO) reports revealed that 80% of populations in Asian and African countries rely on traditional medicines for primary health care necessities (Kim et al., 2012). A pivotal role of plants in the health scenario is attributed to bioactive compounds, which could delay or inhibit the inception of degenerative diseases and increase life expectancy (Jagadish et al., 200, Lakkadi et al 2018, Korkina et al., 2018 Aleksandra et al 2020). Antioxidant medicinal plants, including phenolic and flavonoid are considered beneficial because of their protective actions in diseases as cancer. Phenol and flavonoids have been showed a wide range of biological activities (Bravo et al., 1998), including anticarcinogenic actions. Most of the beneficial health effects of flavonoids are attributed to their antioxidant and chelating abilities. Over product ion of reactive oxygen species (ROS) has shown to have detrimental effects on human health leading to cell/tissue damage and degenerative disorders such as inflammation, cardiovascular and neurogenic diseases, cancer, and aging related disorders.

ARTICLE INFORMATION

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PARTIAL REPLACEMENT OF COARSE AGGREGATE BY EXPANDED POLYSTYRENE BEADS IN CONCRETE

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ABSTRACT

With the increase in demand for construction materials, there is a strong need to utilize alternative materials for sustainable development. The main objective of this investigation is to study the properties, such as compressive strength and tensile strengths of lightweight concrete containing Expanded Polystyrene (EPS) beads. Its properties are compared with those of the normal concrete i.e., without EPS beads. EPS beads are used as partial replacement to coarse aggregates. The results showed that the amount of polystyrene beads incorporated in concrete influences the properties of hardened concrete. It was found that compressive strength of 10%, 15%, 25%, 35% and 35% EPS incorporated concrete strengths were 91%, 77 %, 71%, 63%, 57%, and 45%, respectively when compared to concrete. Expanded polystyrene (EPS) is a lightweight cellular plastics material consisting of fine spherical shaped particles which are comprised of about 98% air and 2% polystyrene. It has a closed cell structure and cannot absorb water. It has a good sound and thermal insulation characteristics as well as impact resistance. Polystyrene foam is a non-biodegradable material.

Keyword: - *Expanded Polystrene Beads, Coarse Aggregate , Fine Aggregate*

1. INTRODUCTION

Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work Introduction related your research work. Increase in the developmental activities world over, the demand for construction materials is increasing exponentially. This trend will have certainly greater impact on the economic system of any country. India also is aiming at a high developmental rate compared to other nations in Asia. There is heavy demand for the building materials in the domestic market, which is becoming scarce day by day. At this point researchers and engineers who have the foresight to keep the developmental activities abreast and curtail the cost factor should look out for other alternative building materials.

In this work, an attempt is made to address the possibility of utilizing Expanded Polystyrene (EPS), a packing material in the form of beads in concrete, which otherwise is posing a threat to waste disposal as well as for waste management. This material is a cause of concern to environmentalists. In this study, it is attempted to partially replace coarse aggregates by means of EPS beads. A general discussion on EPS, its production and its application along with environmental concerns are being discussed.

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EXPERIMENTAL STUDY ON STRENGTHENING OF STEEL FIBRE REINFORCED CONCRETE BEAMS USING GFRP IN FLEXURE

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ABSTRACT

The main aim of this investigation is to study the flexural behaviour of steel fibre reinforced concrete beams retrofitted with GFRP fabric for M30 concrete and compared with control concrete. Six numbers of concrete beams of size 1500x100x150 are casted. Out of six beams three are control beams, three beams are casted with 0.5% of steel fibres. Three beams are retrofitted with single layer of GFRP fabric respectively. All cast beams are tested under two point bending up to failure. The increase in strength due to the bonding of GFRP fabric is calculated based on the test results. From this study it is concluded that the strength of concrete is increased up to 1.3 times if it is bonded with steel fibre reinforced beams, 2.21 times if it is bonded with one layer of GFRP fabric.

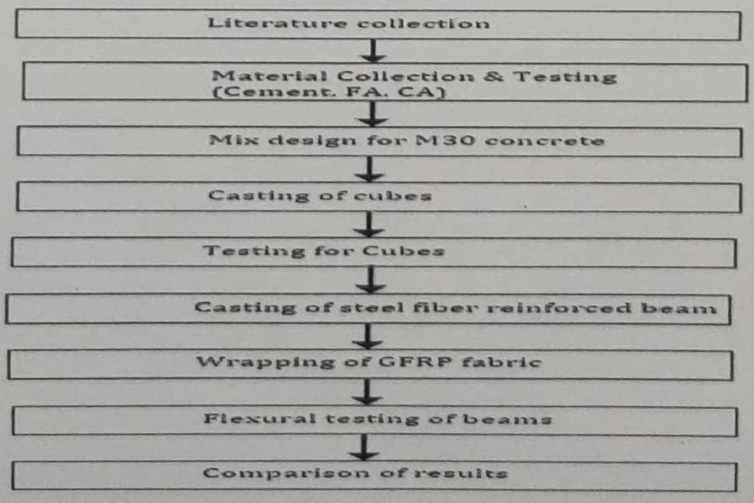
Keywords: Flexure, Reinforcement, GFRP.

I. INTRODUCTION

Advance composite materials are made using a polymeric resin with fibers also known as fiber reinforced polymer materials. The strengthening of existing concrete structures to resist higher design loads and also to increase the ductility has traditionally been accomplished using conventional materials and construction techniques. Many of the applications are for bridge structures that are subjected to repetitive loading. Externally bonded steel plates, steel or concrete jacks and external post-tensioning are some of the traditional techniques. Fiber reinforced polymer composite materials have emerged as an alternative to traditional materials and with techniques due to the following advantages such as light weight, non-corrosive nature, high strength and stiffness to weight ratios and the availability. GFRP sheets with epoxy can be bondedto the structure for retrofitting and rehabilitation of structures. GFRP composites can also be used where traditional techniques would be impractical.

When the loads imposed on concrete approach that for failure cracks would propagate sometimes rapidly; fibers in concrete provide a means of arresting the cracks growth reinforcing steel in concrete have the same beneficial effect because they act as a long continuous fiber. Short discontinuous have the advantage of being uniformly mixed and dispersed throughout the concrete. Fibers in tension zone contribute to improved flexural stiffness whereas fibers in compression zone delay the process of disintegration and thus enabling the beam to develop greater overall ductility at failure. With the incorporation of steel fibers in concrete, an unstable and uncontrolled tensile crack growth is thus transformed into a slow and controlled crack growth.

II. METHODOLOGY



EXPERIMENTAL STUDY ON SHEAR STRENGTH OF STEEL FIBER REINFORCED CONCRETE BEAM

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ABSTRACT

This paper presents the results of shear or flexure tests on steel fiber reinforced concrete beams. In addition to analyzing the influence of fibers on the structural performance in situations of different ratios of shear reinforcement . The test on mechanical properties of concrete i.e compressive , tensile, flexural and shear strength being carried out, even the study of effect of higher temperature on concrete is conducted for 7, 14 and 28 days of cured specimen for both the fiber reinforced and the conventional concrete. Coarse aggregate were chosen, having a particle size mainly between 12 mm and 20 mm. In order to prevent early age cracking , additional internal curing water will be provided by SAP. The main alterations results from the use of fibers were increased shear strength, stiffness and ductility other parameters used in analyzing performance were the properties of the hardened concrete (compressive strength, tensile strength, and flexural strength.

Keyword : *steel fiber , compressive strength, tensile strength, flexural strength*

1.INTRODUCTION

Concrete is a versatile material for civil engineering construction. It has ability to get cast in any form and shape. All basic ingredients of concrete are natural origin. But the properties of concrete can be change by adding some special natural or artificial ingredients. The concrete has many advantageous properties such as good compressive strength, durability, impermeability, specific gravity and fire resistance. However the concrete has some bitter properties, like- weak in tension, brittleness, less resistance to cracking, lower impact strength, heavy weight, etc. Some remedial measures can be taken to minimize these bitter properties of concrete. The some of the bitter properties of concrete are due to micro cracks at mortar aggregate interface. To overcome this, the fibers can be added as one of the ingredients of concrete.

1.1 Methodology

- Review of literature
- Material selection
- Material collection
- Material testing
- Mix design
- Experimental testing
- Results and discussion

EXPERIMENTAL STUDY ON BEHAVIOUR OF BASALT FIBER REINFORCED CONCRETE FILLED STAINLESS STEEL TUBE AND MILD STEEL TUBE

Mrs. P. Sarala,M.E., Mr. P. Dillibabu

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ABSTRACT

Concrete Filled Steel Hollow Section (CFSHS) Columns can carry important loads and therefore they are extensively used in the construction of high-rise buildings. Steel-concrete composite (SCC) columns have widely been applied in modern construction industry owing to the composite action between the concrete and the steel. Composite columns are structural members which are subjected mainly to axial compressive forces and end moments. CFST columns are type of composite column. This type of columns can offer many advantages like high strength, ductility and large energy absorption capacity with possible use of simple standardized connections. This paper is based on the experimental study of slender steel tubular columns of circular sections filled with reinforced concrete and partial replacement of cement by basalt fiber. The detail study about the nature and properties of the materials by various tests and the mix proportion is designed in phase I. As the continuation in phase II standard specimens will be casted and cured for 28 days to get the compressive strength, flexural strength and split tensile strength. Then the final result is evaluated by comparing the above strengths of basalt fiber reinforced concrete filled stainless steel tube column and mild steel tube column.

Keywords: *Flexure test, Reinforcement, GFRP, compressive strength test, tensile test*

1.INTRODUCTION

The world is noticing a transformation in construction practices along with new aspects of development fueled by the accelerated economic growth and high rate of urbanization. The construction industry must keep up with the advanced technology and systems to cope up with the modern trends and demands.In concrete production, about 60% to 80% of aggregate is composed by volume. Both fine and coarse aggregate is used in concrete. The utilization of sand as fine aggregate in the construction industry has increased by an alarming rate. To cater to this increasing demand the industry is facing difficulty in the supply of natural river sand. To overcome that situation, construction industries have identified alternatives like manufactured sand, robo sand, marble dust etc. Another alternative to this can be use of basalt fiber in concrete.Also, many civil engineering infrastructures are no longer considered safe due to increase load specifications in the design codes or due to lack of quality control. In the order to prolong local buckling, prohibit excessive concrete spalling frame construction, therefore the concrete filled steel tube (CFST) columns are implemented.

EXPERIMENTAL INVESTIGATION ON WASTE FOUNDRY SAND WITH RECRON FIBRE IN REINFORCED CEMENT CONCRETE.

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ABSTRACT

The consumption of natural resources in construction has increased from decades, which is the result of high cost. , construction industries have already identified alternatives like manufactured sand, robo sand, rock dust etc. Another alternative to this can be use of waste material in concrete to overcome the use of natural resources use of waste material like foundry sand in concrete could be make possible to achieve the low cost construction. This paper is based on the Experimental investigation on waste foundry sand with recron fibre in Reinforced Cement Concrete. The detail study about the waste foundry sand is a waste material obtained from ferrous and non-ferrous metal casting industries. and properties of the materials are determined by various tests and the mix proportion standard specimens will be casted and cured for 28 days to get the compressive strength, flexural strength and split tensile strength. In this process Recron fibre is comonomer special for(improved holding of cement aggregates ,Tensile strength :4000-6000 kg/cm2, Melting point > 250oC) also fibres are uniformly dispersed which has better properties to resist internal stress due to shrinkage. Also reduces segregation and bleeding Then the final result is evaluated by comparing the above strengths of reinforced concrete filled with waste foundry sand and Recron fibre

KEYWORD *: waste foundry sand, compressive strength test, split tensile test, flexural strength test*

1. INTRODUCTION

The utilization of sand as fine aggregate in the construction industry has increased by an alarming rate construction industries have identified alternatives like manufactured sand, robo sand, rock dust etc. Another alternative to this can be use of waste material in concrete. Waste foundry sand is a waste material obtained from ferrous and non-ferrous metal casting industries. In foundry industries sand is recycled and reused many times for the purpose of casting .The incorporation of such material in concrete can help to reduce the disposal concerns of waste foundry sand, and also makes concrete production economical .The raw sand is normally of a higher quality than the typical bank run or natural sands used in fill construction sites fibres are uniformly dispersed which has better properties to resist internal stress due to shrinkage. Also reduces segregation and bleeding . This leads to better strength and reduced permeability which improves durability

EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT ON COARSE AGGREGATE BY USING KADAPPA STONE

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ABSTRACT

Coarse aggregate is an important constitutes of concrete which are obtained naturally. Here, I can replace new material with the coarse aggregate by using kadappa stone. Kadappa stones were partial replaced as coarse aggregates in 10%,20%,30% respectively and tested for 7 and 28 days. Fresh and hardened concrete properties are evaluated by compressive strength test ,split tensile test and flexural test with a fixed water cement ratio 0.45.and also .The test results were compared with the conventional concrete properties .M20 grade concrete is used.

KEYWORD :kadappa stone, compressive strength test, split tensile test, flexural strength test, slump cone test

1. INTRODUCTIONS

In recent years, there is a growing interest for using waste Kadappa stone in Quarry. This interest has been aggravated by the large amount of waste Kadappa stones were available from constructed residue materials. In such Kadappa could be consumed in concrete. The use of Kadappa stones as Fine aggregate in concrete has been attempted recently. Using suchKadappa stone as a construction material is among the most strictly choice because of potentially reducing the cost of Kadappa stone & concrete production. This including reduced bond strength between the aggregate & cement paste. The interlocking shear strength between the aggregate & the cement paste is less with Kadappa than with natural aggregate. The effect of using waste Kadappa stone on the mechanical properties of concrete has been investigated by many other researches. This results indicated that the waste Kadappa stones aggregate generally increases the strength. This reaction can lead to expansion and cracking of concrete recently, an experimental work as been studies by (AL – Rubaie 2007) to evaluate the properties of concrete mixes containing waste Kadappa stone as partial replacement upto 30% by volume of Coarse Aggregate (blue metal). The results indicate that the concrete mixes containing waste Kadappa stone show slightly reduction in compressive compared with reference mixes. In this experimental study, the effect of using locally available waste Kadappa stones as Coarse aggregate on the mechanical properties of concrete were investigated.

EXPERIMENTAL INVESTIGATION OF SELF CURING CONCRETE USING RECYCLED AGGREGATE

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ABSTRACT

Use of recycled aggregate in concrete can be useful for environmental protection. Curing of concrete plays a major role in developing the concrete micro structure and pore structure and hence improves its durability and performance. Keeping importance to this, an attempt has been made to develop Self Curing Concrete by using Self curing agents. Recycled aggregate with various proportions are casted with PEG 400 admixture and cured for 28 days and the compressive strength, flexural strength and split tensile strength are obtained. M30 grade concrete is used.

KEYWORD : *Recycled aggregates, Virgin coarse aggregate, compressive strength test, split tensile test, flexural strength test*

1. INTRODUCTION

Concrete is everywhere. It is the second most consumed material after water. Construction and demolition waste is generated whenever any construction demolition activity takes place, such as, building roads, bridges, fly over, subway, remodelling etc. According to a study commissioned by Technology Information Forecasting and Assessment Council (TIFAC), 70% of the construction industry is not aware of recycling techniques. Recycling of concrete and masonry waste is, however, being done abroad in countries like U.K., USA, France, Denmark, Germany and Japan.The applications of recycled aggregate in the construction areas are wide. Replacing it for different percentages gives good results. Self curing or internal curing is a technique that can be used to provide additional moisture in concrete for more effective hydration of cement and reduced self-desiccation. PEG400 is a good admixture for self-curing.

AN EXPERIMENTAL STUDY OF EGG SHELL AND FISH BONE REINFORCED CONCRETE

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ABSTRACT

In order to conserve natural resources and economize energy, weight reduction has been the main focus of machine parts manufacturers in the present scenario. The egg shell powder composite is one of the potential items for weight reduction of about 20% - 30%. The introduction of egg shell powder composite materials was made it possible to reduce the weight without any reduction on load carrying capacity, more elastic strain energy storage capacity and high strength to weight ratio as compared with those of steel. This project presents structural tests with normal strength fibre reinforced concrete with reinforcement ratios that varied between 0 to 30%.

KEYWORD : *Egg shell, Fish bone, compressive strength test, split tensile test, flexural strength test.*

1. INTRODUCTION

According to the literature, by the beginning of the next century the wood will be scarce for the whole world. This situation has led to the development of alternative material. Among various synthetic materials that have been explored and advocated, plastics claim a major share as wood substitutes. Plastics are used for almost everything from the articles of daily use to the components of complicated engineering structures and heavy industrial applications. However, during the last decade, the study of filled plastic composites has simulated immense interest in meeting the future shortage of plastic materials. In fact, synthetic fibers such as nylon, rayon, aramid, glass, polyester and carbon are extensively used for the reinforcement of plastics. Nevertheless, these materials are expensive and are non-renewable resources. Because of the uncertainties prevailing in the supply and price of petroleum based products, there is every need to use the naturally occurring alternatives. Egg shell powder is a natural fibre extracted from the husk of egg shell powder and used in products such as floor mats, doormats, brushes, mattresses, etc. Egg shell powder is the fibrous material found between the hard, internal shell and the outer coat of a egg shell powder. Other uses of brown egg shell powder (made from ripe egg shell powder) are in upholstery padding, sacking and horticulture. White egg shell powder, harvested from unripe egg shell powders, is used for making finer brushes, string, rope and fishing nets. Ropes and cordage have been in use from ancient times. Indian navigators who sailed the seas to Malaya, Java, China, and the Gulf of Arabia centuries ago used egg shell powder for their ship ropes. Arab writers of the 11th century AD referred to the extensive use of egg shell powder for ship ropes and rigging.

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Performance of Self Compacting Concrete with Partial Replacement of Cement with Nano-Silica

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Abstract: ***Self compacting concrete – a special concrete with an extra ordinary property of compacting itself, reduces the possibility of human error. With this, the combination of Nano-Silica gives a marvellous strength in the construction field. Though the use of self compacting concrete reduces the cost of manual compaction, the use of self compacting concrete along with Nano-silica particles helps in finishing the construction work faster by acquiring strength faster. This present study is about the influence of Nano technology on the properties of self compacting concrete. By adding Nano materials like Nano silica, the rate of hydration, permeability, durability, compressive strength, split tensile strength, flexural strength is increased with increase in concentration of Nano-silica. Application of nano materials in concrete technology can potentially change the service life and life cycle cost of construction infrastructure. This study presents the behaviour of self compacting concrete(SCC) with partial replacement of cement with Nano-silica. The objective of the investigation is to develop a reinforced concrete beam with Nano-silica as partial replacement for cement. Then the results are to be compared with conventional beams.***

I. SELF COMPACTING CONCRETE

SCC is basically a concrete which is capable of flowing into the form work, without segregation and bleeding, reduces manpower, better finishes, easier placement, better durability, thinner concrete sections, lesser noise levels, no vibration, safe working environment, to fill uniformly and completely every corner of it by own weight without any application of vibration or other mechanism during placing of concrete. The advantages of SCC make this concrete more desirable all over the world which includes faster construction.

A. Aim

The aim of the present study is to investigate the mechanical and durability properties of concrete with fine aggregate is partially replaced with nano silica. The replacements are varied by various proportions such as 2%,4% and 6% by weight of fine aggregate.

B. Scope

The scope of this project is to produce concrete with usage of nano-silica as a replacement to cement and to study about the mechanical properties and durability properties where considered.

C. Main Objective

Based on the study the major objective of the project is identified as the investigation on properties of self compacting concrete by using various percentage of nano-silica and its possible results are determined in the sub-objectives to achieve the major goal.
To study the properties of self compacting concrete with natural coarse aggregates along with the effects of admixtures (Nano-silica) varying percentage 2%, 4% and 6%. To study properties of conventional concrete with Self compacting concrete using admixture. To investigate the properties of medium strength concrete incorporated with nano-silica as weight of cement quantity as per the construction practice. The behaviour is to be found by conducting hardened concrete test and compared with conventional concrete

II. METHODOLOGY

Initially, literature survey (collection of data) has been done. The main objective of this project is to improve the strength of concrete by using nanosilica partially as a replacement for cement. Detailed study about the materials has been carried out. The materials collected are Cement OPC 53 grade, nanosilica used as replacement up to lesser percentages and 20mm coarse aggregate is used for this project. Physical properties such as sieve analysis of aggregates, water absorption, initial and final setting time of cement and consistency of cement are tested. Calculation for various percentage of mix proportions are done. In Phase II, casting and testing of the concrete specimens are done.

Experimental Study on Fiber Reinforced Copper Slag Concrete

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Abstract: **This document describes the partially replacement of coarse aggregate into the copper slag, where as the sand are more expensive and less adequate in the present days. The replacement method of the coarse aggregate is effective to overcome. This paper is evaluated the comparison of conventional concrete and the partially replacement of the copper slag and steel fibre, of the following percentage in M20 grade as well as M30 grade. compressive test, flexural strength test, spilt tensile test. Are done and compared**

IndexTerms - **copper slag, steel Fibre, compressive strength, spilt tensile test, flexural strength.**

I. INTRODUCTION

Now a days the fine aggregate became more expensive and less adequate. The partial replacement technique of fine aggregate and coarse aggregate study are made at present days. This paper shows that the partially replacement of fine aggregate into the coppers Slag. The study made for the following mix condition are given below. Copper slag, or fayalitic slag, is a by-product obtained during the matte smelting, converting and refining of copper, It has been estimated that for every tons of copper produced, about 2.2 tons of slag is generate

- 0 % of copper slag as replacement of sand
- 10 % of copper slag as replacement of sand
- 20 % of copper slag as replacement of sand
- 30 % of copper slag as replacement of sand
- 40 % of copper slag as replacement of sand
- 50 % of copper slag as replacement of sand
- 0 %of copper slag and 0% crimped steel fiber
- 0 % of copper slag and 0.5% crimped steel fiber
- 0 % of copper slag and 1% crimped steel fiber
- 0 % of copper slag and 1.5% crimped steel fiber
- 40 % of copper slag and 0% crimped steel fiber
- 40 % of copper slag and 0.5% crimped steel fiber
- 40 % of copper slag and 1% crimped steel fiber
- 40 % of copper slag and 1.5% crimped steel fiber

II. PHYSICAL PROPERTIES

The physical properties are the following test specific gravity, finesse modulus, standard consistency, bulk density, sieve analysis is taken on the cement, fine aggregate, coarse aggregate, copper slag, steel fiber the following test results are given below.

TABLE 1:TEST RESULTS ON CEMENT

SL.NO	TEST	RESULTS	REQUIREMENTS AS PER IS 12269-1987
1	Standard consistently	32%	-
2	Setting time a) Initial setting time b) Final Setting time	 90 mins 400 mins	 30 min(minimum) 600 min (maximum)
3	Specific gravity	3.01	-
4	Fineness a) By IS sieve No.9 b) By Blain's Air Permeability	 3% 316 m^2/kg	 10% (maximum) 225 m^2/kg (Minimum)

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Experimental Investigation on Mechanical Properties of Polypropylene Fibre Reinforced Pervious Concrete

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Abstract: ***Pervious concrete is also called as porous concrete. It allows runoff or precipitation to penetrate into ground because, it may leads to disaster for environmental effects and conditions and so by using strengthened pervious concrete might be a eco friendly.***

Keywords: Porous concrete, permeability, compacting factor, polypropylene fibre, void ratio

I. INTRODUCTION

Pervious concrete is a concrete generally made with cement, aggregate and Water. It is highly porous and permeable. Pervious Concrete is more economical than conventional concrete. To Enhance Sufficient Strength different Proportion of polypropylene fibre is added of about 0.2 percent of volume

II. METHODOLOGY

1) Review of literature
2) Material Selection
3) Material Testing
4) Mix design
5) Specimen casting and curing
6) Strengthening of beam using Polypropylene fibre reinforced concrete
7) Testing of specimen
8) Results and Discussion
9) Conclusion

A. Material Selection

Materials are selected based on IS codes here, Cement, coarse aggregate, Polypropylene fibres are to be used
IS 269:1989 - OPC 53 grade cement
IS 383:1970 - Coarse aggregate 12.5mm size
Water – Normal Portable Water is used

III.POLYPROPYLENE FIBRE

Polypropylene fibre is also known as synthetic fibre, It is the first stereoregular polymer to have reached Industrial Importance .It is used for several purposes such as for carpet, clothing and a thin film for packaging also for a pavement construction. Water penetration is nil in polypropylene fibre so,the binding between cement and coarse aggregate is high.It is easy to access, lowprice and provides excellent chemical resistance
Types of polypropylene fibre
Microfilament fibre-length(40mm)- 0.35 diameter
Fibrillated fibre – length (30mm)- 0.30 diameter

A. Material Test

Material test for cement and coarse aggregate has been tested according to the IS codal provisions. Several test are carried out for coarse aggregate and cement are such as standard consistency of cement,Initial Setting Time of cement,final setting time of cement and for coarse aggregate such as abrasion test, Impact Value test ,Specific gravity of coarse aggregate and fineness modulus etc.The above given test results are mentioned in Table-I

A Study on Recycling of Crumb Rubber And Low Density Polyethylene Blend on Stone Matrix Asphalt

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Abstract- *Stone Matrix Asphalt (SMA) is gap graded hot mixture asphalt that is designed to maximize deformation resistance and durability by using a structural basis of stone – on-stone contact. To prevent pavement distresses there are various solutions such as adopting new mix designs or utilization of asphalt additives.To minimize the pollution from waste tires and to improve the properties of SMA, Recycled Crumb Rubber (CR) plus Low Density Polyethylene (LDPE) flakes were used as additive using dry process in this study. This project investigate the feasibility of using 16% and 20% CR+LDPE by weight of bitumen with 60/70 penetration grade bitumen for SMA. SMA mixture with varying bituminous mix of 6% and 6.5% of weight of aggregate has been applied to determine the properties of SMA with crumb rubber and low density polyethylene. Indirect tensile tests were carried out in the matrix No fiber was needed to prevent drain down when this rubber blend was used. The addition of CR+ LDPE using dry process could improve engineering properties of SMA mixtures, and the rubber content has a significant effect on long term performance.*

Keywords- Recycled crumb rubber, low density polyethylene flakes, dry process, SMA, mix design.

I. INTRODUCTION

Stone matrix asphalt (SMA) has found use in Europe, Australia and the United States as a durable asphalt surfacing option for residential streets and highways. SMA has a high coarse aggregate content that interlocks to form a stone skeleton that resist permanent deformation.The world generates about 1.5 billion waste tyres annually, 40 percent of them in emerging markets such as China, India, South Africa, South East Asia, South America and Eastern Europe. The huge number of waste tyres disposal has become an urgent problem of environment in India. The disposal of waste tyres in the world primarily has three ways to deal with such as landfill, burning and recycling. Recycled tire rubber applied to pavement may be the best way to reduce waste tyres in large quantities and, at the same time, improve some engineering properties of asphalt mixtures. The excellent performances of SMA include resistant to mechanical and temperature deformation, cracking, and particularly rutting, resistant to weathering actions such as aging and low temperature cracking.SMA provides a deformation resistant, durable, surfacing material, suitable for heavily trafficked roads.Typical SMA composition consists of 70–80% coarse aggregate, 8–12% filler, 6.0–7.0% binder, and 0.3 per cent fibre. Crumb rubber can be incorporate by a wet process or dry process. Wet process refers to modification of asphalt cement binder with 5-25 wt% of fine tyre rubber Crumb Modifier (CRM) at an elevated temperature. The dry process includes mixing the rubber particles with aggregates prior to addition to asphalt.In this project study, a dry processing of Crumb Rubber (CR) and Low Density Polyethylene (LDPE) blend were used as additive for SMA mixture. The main purpose of this research is to determine the effects of incorporating CR + LDPE waste on the engineering properties of SMA.

SIGNIFICANCE

The current project is able

- To provide a mixture that offered maximum resistance to studded tire wear.
- To prevent pavement distresses, new mix designs of asphalt additives is developed.
- To minimize the damage of pavement such as resistance to rutting and fatigue cracking, asphalt needs to be modified with polymer such as crumb rubber modifier (CRM) and low density poly ethylene (LDPE).
- To reduce the cost of rehabilitation.
- To develop a new material that improves the durability of the SMA mix.

APPLICATIONS:

Stone Mastic Asphalt has proved superior on heavily trafficked roads and industrial applications:

- With high lorry frequency

To Investigate The Performance Characteristics of Bitumen Mixture Using RAP & RCA

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Abstract- *this research investigated to reuse the existing pavement materials [RAP, RCA].For several reasons mainly to preserve natural resources such as aggregate & to satisfy economic requirement by reducing the cost of highway construction and rehabilitation.Now a day's usage of road is more, so the volume of vehicle is high. Since it leads to high traffic and causes damage on pavement surface so the maintenance process on road surface is done regularly so the usage of natural aggregate is higher on road construction the road construction industry are consuming more amount of natural aggregate on road construction since to reduce the usage of natural aggregate in road construction we are introducing RAP and RCA*

Keywords- Reclaimed Asphalt Pavement (RAP), Recycled Concrete Aggregate (RCA)

I. INTRODUCTION

The aim is to reuse the existing pavement materials [RAP, RCA].For several reasons mainly to preserve natural resources such as aggregate & to satisfy economic requirement by reducing the cost of highway construction and rehabilitation. This type of method ultimately convert old asphalt concrete pavement into sustainable pavement. The phase of construction, maintenance, and with the introduction of new technique of perpetual pavement RAP&RCA it is necessary to consider recycling as one of the promising solutions for rehabilitation of old asphalt concrete pavement and ultimately to convert them into perpetual Pavements The aim is to reuse the existing pavement materials for several reasons, mainly to preserve natural resources such as aggregates, and to satisfy economic requirements by reducing the cost of highway construction and rehabilitation. Now a day's usage of road is more, so the volume of vehicle is high. Since it leads to high traffic and causes damage on pavement surface so the maintenance process on road surface is done regularly so the usage of natural aggregate is higher on road construction the road construction industry are consuming more amount of natural aggregate on road construction since to reduce the usage of natural aggregate in road construction we are introducing RAP and RCA. General RAP & RAC Composition consists of 70–80% coarse aggregate, 8–12% filler, 6.0–7.0% binder, and 0.3 per cent fiber. RAP & RAC can be mixed by a wet process or dry process. During the wet process, asphalt cement binder is modified with 5-25% weight of Reclaimed Asphalt Pavement (RAP) at an elevated temperature. In the dry process, the particles are mixed with aggregates before addition to asphalt. In this project study, the main purpose of this research is to determine the effects of incorporating RAP + RCA waste on the pavement surface.

SIGNIFICANCE

The current project is able

- To provide a mixture that offered maximum resistance to studded tire wear.
- To prevent pavement distresses, a new mix design of asphalt additives is developed.
- To minimize the damage of pavement such as resistance to rutting and fatigue cracking
- To reduce the cost of rehabilitation.
- To protect pavement material for future generation

APPLICATIONS:

Some of the industrial application of Reclaimed Asphalt Pavement and Recycled Concrete Aggregate are

- Highways
- Bridges
- Bus lanes
- Car parks
- Harbors and
- Area With high lorry frequency

OBJECTIVES

1. To study the performance ofRAP&RCA pavement with normal pavement, and find out the ways of cost saving in repair and maintenance of pavement

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EXPERIMENTAL STUDY ON STRENGTHENING OF STEEL FIBRE REINFORCED CONCRETE BEAMS USING GFRP IN FLEXURE

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ABSTRACT

The main aim of this investigation is to study the flexural behaviour of steel fibre reinforced concrete beams retrofitted with GFRP fabric for M30 concrete and compared with control concrete. Six numbers of concrete beams of size 1500x100x150 are casted. Out of six beams three are control beams, three beams are casted with 0.5% of steel fibres. Three beams are retrofitted with single layer of GFRP fabric respectively. All cast beams are tested under two point bending up to failure. The increase in strength due to the bonding of GFRP fabric is calculated based on the test results. From this study it is concluded that the strength of concrete is increased up to 1.3 times if it is bonded with steel fibre reinforced beams, 2.21 times if it is bonded with one layer of GFRP fabric.

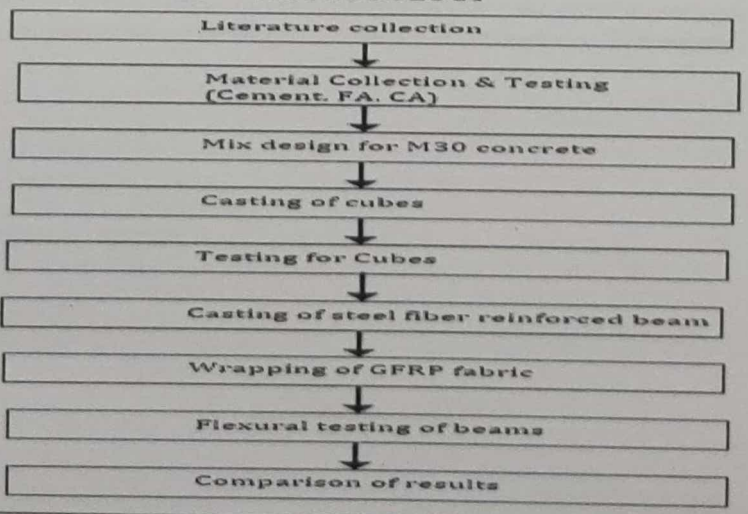
Keywords: Flexure, Reinforcement, GFRP.

I. INTRODUCTION

Advance composite materials are made using a polymeric resin with fibers also known as fiber reinforced polymer materials. The strengthening of existing concrete structures to resist higher design loads and also to increase the ductility has traditionally been accomplished using conventional materials and construction techniques. Many of the applications are for bridge structures that are subjected to repetitive loading. Externally bonded steel plates, steel or concrete jacks and external post-tensioning are some of the traditional techniques. Fiber reinforced polymer composite materials have emerged as an alternative to traditional materials and with techniques due to the following advantages such as light weight, non-corrosive nature, high strength and stiffness to weight ratios and the availability. GFRP sheets with epoxy can be bondedto the structure for retrofitting and rehabilitation of structures. GFRP composites can also be used where traditional techniques would be impractical.

When the loads imposed on concrete approach that for failure cracks would propagate sometimes rapidly; fibers in concrete provide a means of arresting the cracks growth reinforcing steel in concrete have the same beneficial effect because they act as a long continuous fiber. Short discontinuous have the advantage of being uniformly mixed and dispersed throughout the concrete. Fibers in tension zone contribute to improved flexural stiffness whereas fibers in compression zone delay the process of disintegration and thus enabling the beam to develop greater overall ductility at failure. With the incorporation of steel fibers in concrete, an unstable and uncontrolled tensile crack growth is thus transformed into a slow and controlled crack growth.

II. METHODOLOGY



EXPERIMENTAL INVESTIGATION OF PARTIAL REPLACEMENT ON COARSE AGGREGATE BY USING KADAPPA STONE

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ABSTRACT

Coarse aggregate is an important constitutes of concrete which are obtained naturally. Here, I can replace new material with the coarse aggregate by using kadappa stone. Kadappa stones were partial replaced as coarse aggregates in 10%,20%,30% respectively and tested for 7 and 28 days. Fresh and hardened concrete properties are evaluated by compressive strength test ,split tensile test and flexural test with a fixed water cement ratio 0.45.and also .The test results were compared with the conventional concrete properties .M20 grade concrete is used.

KEYWORD :kadappa stone, compressive strength test, split tensile test, flexural strength test, slump cone test

1. INTRODUCTIONS

In recent years, there is a growing interest for using waste Kadappa stone in Quarry. This interest has been aggravated by the large amount of waste Kadappa stones were available from constructed residue materials. In such Kadappa could be consumed in concrete. The use of Kadappa stones as Fine aggregate in concrete has been attempted recently. Using suchKadappa stone as a construction material is among the most strictly choice because of potentially reducing the cost of Kadappa stone & concrete production. This including reduced bond strength between the aggregate & cement paste. The interlocking shear strength between the aggregate & the cement paste is less with Kadappa than with natural aggregate. The effect of using waste Kadappa stone on the mechanical properties of concrete has been investigated by many other researches. This results indicated that the waste Kadappa stones aggregate generally increases the strength. This reaction can lead to expansion and cracking of concrete recently, an experimental work as been studies by (AL – Rubaie 2007) to evaluate the properties of concrete mixes containing waste Kadappa stone as partial replacement upto 30% by volume of Coarse Aggregate (blue metal). The results indicate that the concrete mixes containing waste Kadappa stone show slightly reduction in compressive compared with reference mixes. In this experimental study, the effect of using locally available waste Kadappa stones as Coarse aggregate on the mechanical properties of concrete were investigated.

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Experimental Study on Exploring the Potential of Low Cement Content Concrete through Alkaline Binder

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ABSTRACT
This paper describes the experimental study of using low cement content for concrete manufacturing by the application of polymerization. This geopolymer concrete technology will help us to reduce the carbon emission, economical and helps in growth of concrete industries. In this study industrial wastes like fly ash and GGBS are use for cementicious material whereas calcium hydroxide is used as alkaline activator for the process of polymerization. The paper reveals the experimental study about complete replacement of cement with flyash,GGBS and calcium hydroxide as binder activator. The concrete has good range of workability and there is no delay in setting time since accelerating admixture was used. The cube of size 150mmx150mmx150mm and cylinder of size 150mmx300mm are casted for M25 grade of concrete which is cured under normal temperature. The slump test revealed that the fresh concrete was cohesive and flow was from 80 mm to 120 mm .The compressive and tensile strength are evaluated which is ranges from 10.22 N/mm^2 to 34.22 N/mm^2 and 2.22 N/mm^2 to 4.52 N/mm^2 vice versa. The result of M2 and M3 are superior to conventional mix.

KEYWORDS: *Geoploymer Concrete, Alkaline solution, industrial waste, calcium hydroxide powder*

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I. INTRODUCTION

The global cement industry contributes around 1.35 billion tons of the green house gas emissions annually (e.g. [10]). In order to protect the global environment from the impact of cement production, it is now believed that new binders are helps to replace Portland cement. For that geopolymer concrete is one of the new technologies related to low cost materials and environmental friendly.

The geopolymer technology was first introduced by Davidovits in 1978. His work considerably shows that the adoption of the geopolymer technology could reduce the CO2 emission caused due to cement industries. Davidovits proposed that an alkaline liquid could be used to react with aluminosilicate in a source material of geological origin or in by-product materials such as fly ash to make a binder (e.g. [10]). The geoplolymer concrete is ecofriendly and greener concrete which has the potential to reduce the carbon emission. In this study compressive strength and split tensile strength of geoploymer concrete were carried out .The strength of concrete is basically depend on the (2006) reviewed the development of the ecological risk assessment paradigm in the United States, and identified ways it is being applied and adapted in other countries. Linkov, Satterstrom, Steevens, Ferguson and Pleus (2007) combined state-of-the-art research in multi-criteria decision attribute (MCDA) methods applicable to nanotechnology with a hypothetical case study for nanomaterial management. The example shows how MCDA application can balance societal benefits against unintended side effects and risks, and how it can also bring together multiple lines of evidence to estimate the likely toxicity and risk of nanomaterials given limited information on physical and chemical properties. Burger (2008) studied method for variation of different parameters like cement, flyash and GGBS proportions, addition of calcium hydroxide as alkaline activator etc.

The principal objective of the research were

1. The development of structural grade concrete with different combinations of FA and GGBS.
2. To evaluate the fresh and hardened state behaviours of concrete mixtures with reduced cement content, the so-called low cement content (LCC) concrete towards a greener and more sustainable future in the construction industry
3. To help the concrete industry use less cement with an appropriate water-to-cement ratio (w/c) to meet given workability, strength, and durability requirements; and so as to reduce carbon dioxide emissions, energy consumption, and costs.
4. To develop a mixture proportioning process to manufacture low-cement Based concrete.
5. To study the short-term engineering properties of fresh and hardened low cement concrete.

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Characterization of Historic Lime Mortars in Cultural Heritage Building in Udaipur, Rajasthan

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ABSTRACT
Material characterization of the historical building and associated structures was used to develop a suitable method intervention that is sympathetic to the original materials. Mortars is the most damaged materials therefore, historical mortar from Bichli Haveli historical building and associated structure has been characterized by visual examination, optical microscopy, X ray fluorescence and the results have been compared. The historical mortar is mainly comprised of calcite, quartz and feldspar. The mortar condition has been divided into hard mortar, soft mortar and soft friable mortar.
Various test were conducted like Micro Morphological and Elemental (SEM-EDAX), Mineralogical (XRF) and Thermal Analysis (TGA-DSC) in order to identify the micro structure. The chemical consistency and durability of each composition.
***KEYWORDS**: XRF, SEM-EDAX, TGA-DSC, Bichli Haveli.*

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I. INTRODUCTION

The Bichli Haveli is a traditional Rajasthani Courtyard style home built about 140 years ago. It is situated in the old city of Udaipur in Rajasthan. It was the ancestral house of the Mahim Singh Mehta family decendants. It has sat empty since 1992.

Principal factor of the sustainabilityof historic monuments is usage of compatible materials. In the conservation practice, both lime binders and cement binders often display incompatibility with historic mortars. Cement binders have high content of soluble salts, low vapour permeability, high modulus of elasticity, while lime binders show low mechanical strength, slow hardening and low water resistance. To avoid these disadvantages, a wide range of materials and their combinations are recommended – hydraulic lime, Roman cement, lime with pozzolano additive etc. It has been observed that substitution of a small percentage of lime by cement (below 10% in mass) does not modify the microstructure of the mortar and the mixture can be formulated in order to meet the requirements for conservation mortars. Overall, the choice of material for each object must be based on the knowledge about the original material.

This study helps in the determination of chemical composition of various components present in historic mortar samples collected from Bichli Haveli in Udaipur.

Testings

TGA: Thermogravimetric Analysis is a method of thermal analysis in which the mass of a sample is measured overtime as a temperature changes. The measurements provided information about physical phenomena such as phase transitions, absorption, adsorption and desorption.

A typical thermogravimetric analyzer consists of a precision balance with a sample pan located inside a furnace with a programmable control temperature. The temperature is generally increased at constant rate (or for some applications the temperature is controlled for a constant mass loss) to incur a thermal reaction. The thermal reaction may occur under a variety of atmospheres including: ambient air, vacuum, inert gas, oxidizing/reducing gases, corrosive gases, carburizing gases, vapours of liquids or "self-generated atmosphere" as well as a variety of pressures including: a high vacuum, high pressure, constant pressure, or a controlled pressure.

XRF: X Ray Fluorescence is used to identify the crystalline phases present in a material and thereby reveal chemical composition information. X Ray Fluorescence is useful for evaluating minerals, polymers, corrosion products and unknown materials. In most cases, the samples analysed at element are analysed by powder diffraction using samples prepared as finely ground powders.

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AN INCOME TAX FRAUD DETECTION USING AI

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ABSTRACT

Abstract

With rapid emerging of broadcasting and computing of data, now a day's bank fraud is growing intensively. They are various forms of fraud which are happening in the banking sector. So, in this paper we used the data mining tools to detect the fraud which is happening in the bank by using the data that is already collected by the bank. We make use of supervised machine learning techniques called support vector machines to deploy by giving intentional as well as unintentional clients reactions and to look after new transactions. By using this support vector machine algorithm, we can easily detect the customers who are all doing the fraudulent transactions. After obtaining the outcome from databases of credit card transactions used to fight against banking fraud.

Key words: Supervised machine learning, Support vector machines(SVM),Bank fraud detection, Fraudulent transaction, Data mining

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Metaclassifiers for Predicting the Robotic Navigational Performance

S.Padmapriya, J.S. Richard Jimreeves, P.Kalaiselvi, A.Nageswaran, S.Arun

Prediction of robot steps can be used in path exploring problems and application of data mining techniques, enhances navigational direction of robots. In this paper the proposed method is validated on the data sets using multi classification algorithms with four types of movement classes like Action-ahead, Sharp right turn, small in degree-right turn, and small in degree left turn in a separate layer. We obtain the results based on Meta classifiers' accuracies tabulated. A layered approach is followed for obtaining the more accurate multi-classification.

Keywords: Data Mining, Classifiers, Multiclass, Layered approach, Multi-Classificat

I. INTRODUCTION

This process discovers novel correction pattern and recent trends by shifting through the huge amount of data loaded in storehouse, Using this technique for statistical and analysis for pattern recognition. Process is deal with diagnosis of invisible knowledge through data mining unforeseen patterns and different rules from huge database.

Classifications are one of the most popular Data mining techniques. Classification predicts categorical discrete unordered labels. In the data mining we have a various types of classification techniques which are used such as Decision tree, Fuzzy logic, Meta-Classifier and so on.

The subject exposed in popularized briefly as given below, in part section 2, workout the problem. In part section 3, Analysis and results in experimental output, finally we conclude in part section 4.

II. ESTIMATING CLASSIFIER EFFICIENCY

Supposing classifier efficiency is the most important to allow data to check the efficiency for a given classifier which will mark the future data. The main usage classifier which wraps to provide additional data preprocessing for feature selection accuracy. Some of the techniques for estimating classifiers are k_fold cross Validation methods and bootstrapping. In this paper, Meta Classification methods are implemented. Meta Classification algorithms are Bagging, Dagging, Decorate, AdaBoostM1, and Multi Scheme etc..,.

III. PROPOSED LAYERED MODEL

The main components of our model are classified into two stages, the first stage is to classify the dataset one of two or move forward, the second stage contains three different sequential layers which are able to identify three classes.

The dataset categorized into two sets one as 'Turn' another as 'Move Forward', then we implements the layered approach model.

It consists of three different sequential layers such as Layer(1), Layer(2) and Layer (3) which can identify three classes Whether sharp- right turn, small in degree- right turn, small in degree left turn. To improve high efficiency in second stage, this proposed model is bagging, decorate, multiclass classifier, multi-boost AB.

Classification technique is one of the prominent to data mining process. Classification predicts categorical discrete unordered labels. In the data mining we have a various types of classification techniques which are used such as Decision tree, Fuzzy logic, Meta Classifier and so on.

IV. RESULT

In given below the description of dataset is obtained from the UCI repository, all the data to consist of attributes collected the data from the sensor. SCITOS G5 is the navigation robot through the room follower wall in a clockwise direction, for four cycles, using of sensor ultrasound sensor arranged circularly around its waist.

4.1 Navigation set Description

The Robot Navigation datasets are collected from UCI repository. It navigates or directs the following clockwise direction. It has 4 divisions; using 24 sensors are arranged in circular format. It is in the form of .arff file format. This dataset contains three different files. Each contains a particular or unique reading which is used to evaluate to the work of classifiers with proper input In this we consider the first dataset as it contains more than 5000 attributes and instances.

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Enhanced Cyber Security for Big Data Challenges

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Abstract: In recent years mining of data from social media is attracting more attention due to the explosion in the growth of Big Data. In security, Big Data deals with collection of huge digital information for analyzing, visualizing and to draw the insights for the prediction & prevention of cyber attacks. The Big Data mined about an enterprise from the data cloud, if properly analyzed reveals the private information which is highly risky. Maintaining the privacy of users of social media is the major challenge with respect to the security issues. As the data is generally stored in a data cloud, a boundary of trust must be established between the social media users and the data bank owners. Hence there is requirement of developing an efficient protocol for sharing of data. To secure the sensitive information of the user, data mining can be used along with an effective algorithm. This paper proposes the technique of code inline parsing to make the data more secure from the attacks & cyber hacks along with the SQL injections such that the data on the social media is secured. The proposed method secures the platform of Big Data which protects the user's sensitive information.

Keywords: Big Data , Privacy, Information Security, Social Media

I. INTRODUCTION

In the current era, information technology has attained rapid progress in industries and enterprises which made the term Big Data very popular. The expansion in data growth is very rapid as the data is generated from a variety of sources such as social media, pictures in digital format, digital videos, business record, etc. Management of this large amount of data known as Big Data is a challenging task. This data can gain revenue to the enterprises as proper analysis of this Big Data leads to proper understanding of the customer requirements to take decision on the strategic basis. On the other hand, hacking of the big data leads to serious threat as there is possibility of insertion of malicious software in the operating systems and the apps. Hence to secure the big data from the cyber threats enhanced method is proposed and implemented in this paper.

II. BIG DATA'S GROWTH

Day by day there is rapid increase in the amount of data generation as the number of users using social media such as whatsapp, facebook, twitter etc. are increasing rapidly. According to the analysis of IBM, 95% of the data of the world id generated in the last few years and still generation of data is continued at a rate of 2.5 quintillions of bytes data every data [2].

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The great problem of big data is with its storage. Database of large sizes are required for storing big data and literally not possible to manage these huge database with the commonly used database management system.As the datasets ranges between terabytes & exabytes, securing its privacy and protection is its greatest challenge. Storage and analysis of big data provides a sense of reliability for the enterprises. This paper proposes enhanced method for securing big data.

III. SECURITY THREATS MEASURES

Securing the privacy of user's information is the major challenge in the point of view of security for the big data, such as attackers & hackers trying to access the information stored in the database about the user. There is breaching in the security of information due to the various security issues. A set of codes called as SQL injection are passed by the attackers & hackers to break the access of database. Default codes are used by the attackers through which the security of the database is broken. Around the globe, there is requirement for data as most of the companies face shortage of such skills. Hence to fill the gap in the skills of the workers companies avail online training for all the workers in order to meet the requirement. Therefore the security is breached by the various ways. The major aspects for maintaining the confidentiality are the user identification & authentication which indicates the right of accessing the information. The threats commonly encountered by the confidentiality of information are virus attacks, unauthenticated user activity, hackers, downloading of infected files.

IV. SECURITY OF BIG DATA

Many businesses use big data as it has broad prospect across the globe, in the field of marketing and technical research without looking for the prospect of security as generally there will not be any major concern with the new techniques for security. The big data breaches is huge as shown in Fig.1 similar to that of the technology with serious damage of reputation compared to present situation. Business can gain improved insight of capacity of customer by properly storing and analyzing the big data as these peta bytes of data includes content from the social media, weblogs and stream data. Reasonably classification is facilitated by the ownership of the big data.

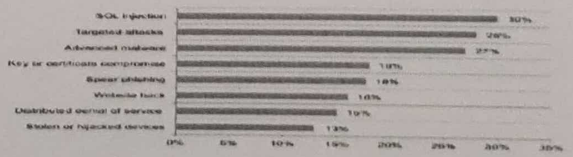

Fig 1.Breaching of Criminal or Malicious Software

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Design and Implementation of Autonomous Flower Harvester using Image Processing

A.VinothKumar, V.Kannarasu, S.Padmapriya, N.Partheeban, S.Arun

Abstract *In this paper to design and implementation of fully autonomous system which can harvest flowers. The flowers will be able to cut from the plant by using the device proposed in this paper in a perfect condition which will take lesser time for harvesting as compared to the manual harvesting by humans. In recent days, automated flower harvesting is available only for large flowers like tulip. Thus there will be a requirement for harvesting smaller flowers like rose. This procedure will solve this problem and also it is cost efficient then manual harvesting. In this procedure the watershed algorithm is used to detect the flowers. By the histogram distance calculation, the detected flower is compared to the flowers which are already present in the database. If the detected flower matches 70-80%, then there will be the calculation of centroid of the flower and the distance from the centroid at which the stem is to be cut. The robotic arm is provided that will cut the matched flower when the signal has received to it via microcontroller. The project has to establish a cost effective harvesting systems for agricultural purpose.*

I. INTRODUCTION

Image processing is a technique to analysing and manipulating the image, in charge to get the required in sequence of the picture or to enhance it. In the image processing input is given as a picture and the simulation output might be a picture or some specified characteristics or feature of that image. It is narrowly connected to the vision and graphics of the computer in which forms main research area in computer graphics, engineering, etc.

The most common is digital image processing, but there is a possibility of analog and optical image processing. In the hard copies like photographs the analog technologies are used. Digital image is nothing but the spatial co-ordinates (say x,y) are having discrete values. Digital images are cost effective and faster to process. Image processing is a vast area in which the various interpretations are used. The image processing tool is an important role is association through visual techniques. Thus the image processing analysts apply the collateral data along with the personal knowledge for processing the image.

The systems that monitors are react or manage an outer environment which are connected through physical sensors, Interfaces between input and output, actuators that can have biological or physical objects of any structure and form is a real time embedded system. It should meet some timing and various constrains due to the real time application as it going to interface with external world.

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This autonomous system will allow the harvesting of smaller flowers with higher feasibility. This system consists of a sequence of elements for harvesting flowers at right time with collision avoidance. They are motors, sensors, collision avoidance along with the gripper and the robotic arm.

II. SYSTEM DESCRIPTION

In this procedure the water shed algorithm is implemented for detecting the flower. According to the algorithm the description is given below.

1. Replicate filtering:

The input array value external the limits of the array are supposed to he same nearest array limt values in the duplicate filter. The data types are handled as the image arithmetic functions by IM filter function. This IM filter is used to reduce the null padding artifacts in the picture around their edges. It offers the border replication which is nothing but the boundary padding method. To attain this, additional argument ,,replicate'' is used to IM filter.

13=imfilter(I,h, ,,replicate'');
figure; imshow(13), title(,,filtered with border replication'')

III. CALCULATION OF GRADIENT:

A directional change in the colour or strength of a picture is called as the image gradient. The image gradient is the essential structure building block used in the image processing.

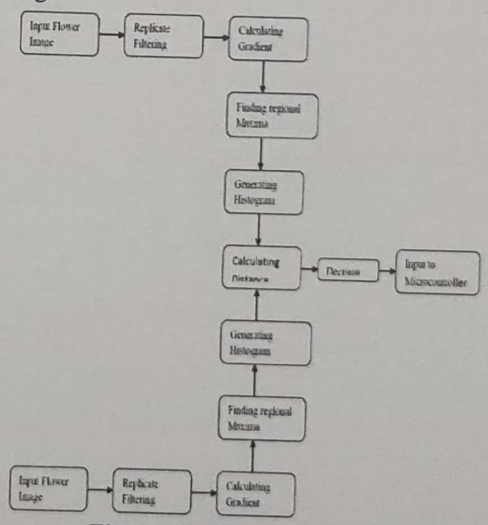

Fig.2.1: System description

Using this image gradient, vertical and horizontal edges are detected. Horizontal gradient is used to detect the vertical edges,and then the extreme values of the image gradient are used to find the threshold values. The calculation of horizontal gradient was given

Implementation of Employee Quarters Management System in ERP SAP Foran Organization

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V. S. Padmini

K. Pavithra

V. S. Sriraja Balaguru

G. Varun Kumar

S. Karthik

Abstract

The Employee Quarters Management system is an effective and customized comprehensive solution for the Allotment of Residential Quarters in an Organization. After the vast development in Globalization, Business dimensions and Principles are very rapidly changing. Also, the Global market is open for automation in the need of fulfilling the substantial improvements and customizing the service standards of the Organization. With the rapid growth of Human-Computer Interaction, more and more software applications are replacing the human efforts. This project also integrates the idea to an automatically enumerable system instead of manually managing the availability of Residential Quarters in an organization. Enterprise Resource Planning (ERP) helps Enterprises or huge organizations to enhance their employee services. As a result, this automation is done in ERP such that to reduce the possible human errors and also to provide and update the correct information instantly.It also enhances the accuracy of locating the Residential Quarters with respect to their priority, availability and posts.

Pdf

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Section
Articles

NOVEL APPROACH FOR WAREHOUSE AND QUALITY MANAGEMENT USING ERP SAP

Dr. Padma Priya.S, Mr Prakash.M, Mr.SreeBalaguru, Mithrasingh.H, Anuvittha.V, Meenatchi.R, Indhumathi.E

Abstract

The main objective of the warehouse module is to manage all the different materials which are usable for the organization to produce a final product warehouse the various types of materials such as raw materials, semi-finished goods and finished goods. Through this module we control, organize materials as per the international standards and we are transforming into a paperless office which is the major advantage of this SAP. This kind of the software is used to maintain bigdata. In India warehouse module helps us to work in digital environment and we are implementing warehouse with an quality management which reflects the technical parameter of the material. The material inspection can be proceeded with two characteristics namely quantitative and qualitative this QM module helps us to check the history of the inspection as per as material wise as well as vendor wise.

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SAP ERP based HR Module for an Educational Institution Payroll

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Abstract
Management Business is rapidly increasing in the world. Enterprise Resource Planning (ERP) has high productivity which are static and integration done seamlessly with their respective modules. With the help of HR module, unambiguous hierarchy of the employees within their organization along with their roles and positions, then maintenance done. In order to maintain consistency, we implemented a systematic fixed operating process and up-to-date maintenance procedure using SAP-Staff maintenance, which helps to manage all maintenance activities.

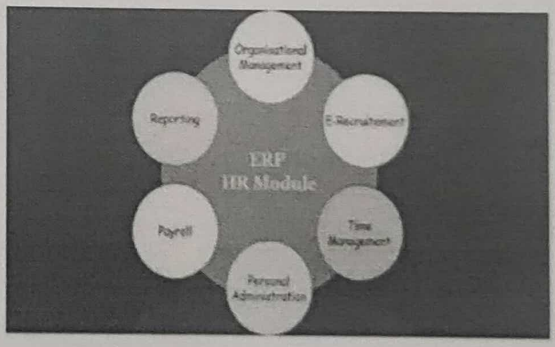
Keywords: *Enterprise Resource Planning (ERP), Graphical User Interface (GUI)*

1. Introduction

With the introduction of ERP systems, any educational organization, the data of their employees will be as a file, a folder, an e-book, or any digital information from any electronic device. The ERP device is the quality answer for any information system which remains your system simple after it has built the structure of the system in that time. Optimization and resource usage is the key component of any enterprise which has the inclination to attain the first-class outcome from the prevailing infrastructure. Institute control is the largest mission for any organization to gain the favored desires, excellent quality and the targets. ERP structures are followed by the numerous educational organizations for key managerial and theoretical services. In an educational organization the combination of all enterprise resources represents the mixing of systems for human resource management (monitoring of employees) and finance (accounting, payments, investments and finances) that was once reinforced through discrete and often incompatible data applications. Nowadays, organizations are renewing the human assets and turning them into one of the essential features of the challenge management. In an organization, Staff creation and maintenance functions are fully integrated and mainly focusing on management, recruitment and providing direction for the people who are working. The research on human resource in the framework of ERP is relatively new.

2. Enterprise Resource Planning System

Enterprise Resource Planning (ERP) is a software combines every streams and functions across of organization to a centralized system which serves every organization particular need. ERP is a common referral name for every software provided by many vendors. Some of them are SAP, ORACLE, BANN, Microsoft etc. ERP solution through SAP is suitable to dealing with organization's huge network of business.



3. Benefits of SAP-ERP

- SAP is primarily used in every Management tasks of a organization including creating organization, managing organization and customer information, and controlling finances and finally generating the payroll.

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A Rational Approach of Sap ERP Based HR Module for an Organisation Payroll

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Abstract
The main objective of this paper is to overcome the difficulty in maintaining the data and generating different reports with respect to the manual request transaction. It also overcomes the difficulty of issuing pay-slip to all the employees every month going through the various records of the organization by manual. The real problem is to monitor and maintain a different database for an organization in managing the pay-slips for the employees of the organization involved in various departments, grades and designations. It is tedious to calculate the gross salary of an employee by checking the deductions like leaves taken in that month,total deductions along with his provident fund , IT And savings. Hence in order to overcome these manual difficulties of the organization the present system is automated to perform all the day to day activities of the organization.

Keywords: *Data and generating, Manual request, Issuing Pay-slip*

1. Introduction

With the introduction of ERP systems, any educational organization, the data about the employees will be stored as a file, a folder, or any digital information from any electronic device. ERP is software tool which is used to built the organization that includes various industrial sector, despite of its strength and size. The ERP package is computerized to integrate and support each and every functional area of a business process such as sale and distribution, finance, accountings, human resource, manufacturing, production planning, logistics and warehouse management. The SAP R/3 Application Enterprise suite suitable for open client/server systems has variant new principles for the perfect business information management solutions. The main advantage of implementation of SAP ERP system is that has high level integration among its individual applications that guarantee consistency of data throughout the SAP system and also with the organization. In standard SAP project system, it can be divided into three environments, Development, Quality Assurance and Production.

Enterprise Resource Planning System

ERP stands for Enterprise Resource Planning is a business software system that support business or enterprise throughout the project in organizing, planning, maintaining, tracking and utilization of resources (Man, Machine, Material and Money) effectively. Some of them are SAP, ORACLE, BANN, Microsoft etc. ERP solution through SAP is suitable to dealing with organisation's huge network of business.

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SAP ERP Based PM Module

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Abstract
Maintaining the particular plant in SAP Enterprise Asset Management (SAP EAM) is more than just a routine check-up. The PM module in the sap Enterprise Resource Planning (ERP) has a rich mechanization features which are static in nature and integrates seamlessly with assorted modules. Our main objective is to have the highest possible performance in terms of health, safety, availability, efficiency and asset integrity for all types of power station. In order to manage all maintenance procedures. We had to implement operating process systematically using SAP-Plant maintenance.

Keywords: *SAP, ERP, PM*

1. Introduction

With the introduction of ERP systems, any educational system, the data in their statistics device is in the document or a folder, an e-book, or digital information from any of the electrical device. The ERP device in which the quality answer for the information system that remains your system simple after it has built the structure of the system in over a period. Many of the resource usage is the component of which enterprise the inclination for attaining first-class outcome to the prevailing structure. Structure control is the largest mission to any of the field to gain the favoured desires, excellent quality and the targets. ERP structures are followed by the numerous educational organizations for key managerial and theoretical services. In an educational organization the combination of all enterprise resources represents the collection of systems for human resource management and finance that was once reinforced through discrete and often incompatible data applications. Nowadays, industries are renewing the human assets and turning them into one of the essential features of the challenge management. In an organization plant maintenance functions are fully integrated and mainly focusing on management, recruitment and providing direction for the people who are working.

Enterprise Resource Planning System

ERP is a software that combines all streams and functions across an organization onto a computer system and serves all the department's particular needs. ERP is a common name for all software provided by various vendors.
Some of the Enterprise vendors are SAP, ORACLE, BANN, Microsoft etc. The ERP solution through SAP (a software package) is found to be suitable to deal with our huge network of business.

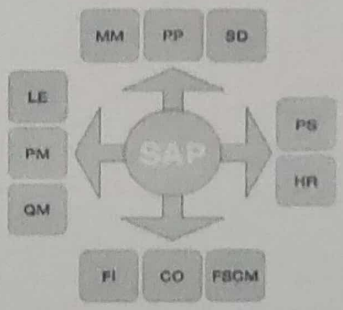

Figure 1: SAP Function modules

Benefits of ERP SAP

- SAP is primarily using in a company for all business management tasks of which includes paying invoices, managing product and information of customer, and controlling finances.

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Designing of Multiplexers using Quantum-Dot Cellular Automata

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Abstract
Current transistor based semiconductor gadgets are getting impervious to scaling. Because of diminishing supply voltage, the force utilization from leakage current is a major test. Nano innovation is the conceivable option in contrast to these issues. In these potential choices, Quantum dot cell automata is designed to represent data and perform computations. It has potential for faster speed, littler measure and low force utilization. It is having a basic cell as the essential component. Combinational circuits like adders and multipliers were actualized beforehand. In this paper, we are going to execute multiplexers and demultiplexers utilizing quantum cells. Multiplexers are the combinational circuits which can switch at least two information signs to a yield port. Multiplexers find wide applications in correspondence systems, exchanging exercises, instruments and so on.

Keywords: *Quantum dot automata, Quantum Cellular, Multiplexers, Demultiplexers*

1. Introduction

From the statement of Moore's law, we are well-known that the transistor thickness duplicates for at regular intervals. In any case, in nowadays the scaling of MOS devices getting extremely troublesome. On the off chance that we need to scale the gadgets we should scale the channel length, however in the event that we scale the channel length the spillage flows will increment, and furthermore the door and channel may get converse predisposition. Thus, there is a breaking point to the scaling of the gadgets. So as to defeat with the issues of scaling the MOS gadgets, such a large number of examines are made. Among them Quantum-dab Cellular Automata [1] which can be an answer for the scaling issues in CMOS innovation.

Quantum-dot Cellular Automata (QCA), which make use of arrays of coupled quantum dots to put in operation Boolean logic functions. Conventional digital technologies use ranges of voltage or current to represent binary values. In contrast, QCA uses the position of electrons in quantum dots to represent binary values '0' and '1'. The advantage of QCA is the exceptionally high packing derived from the small size of dots along with the interconnection simplicity and the notably low power-delay product [2],[3].

The paper is organized as follows. In Section II, the back bone of QCA circuits are explained, Section III and IV show the architectural design and implementation of multiplexers and demultiplexers. Simulation results are presented in Section V and in Section VI the conclusion follows.

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Early Forest Fire Recognition using Deep Learning

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Abstract
Currently many research organizations are under going to develop a reliable and an efficient methods to predict the fire disasters, which may urge to serious social impact as well as heavy property loss. From a video sequence of fire, we are going to implement deep learning method which counterfeit humans. In traditional method they employed human as inspector to detect the forest fire, but human resource is very expensive and also such approach has very low efficiency. To detect the particles like smoke or fire, temperature, relative humidity the fire sensors are implied. To achieve high accuracy rate of fire, it can be achieved by applying deep recurrence neural network. Here, the fire soldiers can move from the other side of the forest to save the forest.

Keywords: *Forest Fire Recognition, Deep Learning*

1. Introduction

An well-organized vision based fire detecting algorithm is judgemental for early forest fire detection. A Significant dispute to human life, animals and nature is forest fire. We should promptly extinguished the fire or else, it will have bad impact on society. Due to interference between human and forest ecosystem has tremendously increases the forest fire incidences. As per the forest survey of India (FSI) analysis more than 95 % of the forest fire in India are manmade. The study was made by Forest survey of India. In that 1.45 million hectares of forest area are affected annually in country. Although early symptoms of forest fire is smoke. Smoke identification also focused on forest fire monitoring system. Vision-based smoke detection sensors have some limitations. These algorithm usually combines feature extraction, motion detection. Spatial features and temporal features form the single frame image is analysed using video based detection. In this we are proposing a deep learning based fire detection method. Compared with image based and short term video based method long term video based method can improves the fire detection accuracy successfully. And also it reduce false detection and misdetection. Sunset, chimney smoke and clouds are some of the examples that are often includes error in computer vision during fire detection.

Deep learning with convolutional neural network are good at modelling and processing sequence data for prediction. In [1] this research proposed a deep normalization and convolution neural network is a traditional convolutional layer to accelerate the smoke detection.

In forest fire detection one of the important feature is dynamic feature. The vision system of human is admirable at recognizing moving fire in sequence of image, because it analyses the dynamic characteristics. Dynamic features where collected and extracted to improve the recognition accuracy. There are many researches where going related to forest fire using deep learning [2] proposes faster RCNN and 3d CNN as a joint frame work. To avoid large computational complexity, an algorithm like CNN is not suitable. Recognition of forest fire becomes difficult due to two reasons, (1) it is difficult to pursue efficient spatiotemporal fire (2) there are different motion saliency feature of fire in each frame, so we must pay attention to different frames. In Other neural network are independent of each other. And all the inputs are related to each other in RNN. To extend the effective use of pixels neighbourhood it is extended to use RNN.

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Android Based Visual Product Identification for the Blind

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Abstract
This application is build to help the visually challenged people. This is a camera-based system. Camera is used to scan the barcode on the product .This provides the product details that are gathered in the barcode id. It is very useful in case of detecting the product details of wraped goods to the visually challenged people and guiding them whether to purchase the goods or not to purchase the goods .To operate this system , the blind people need to capture the image of the product and then it will scan the picture to detect the barcode . This system is highly useful for the blind people for finding the product details. The blind people are facing difficulties during the shopping activities in that case, this application is very useful. This application is very easy to operate and it is affordable by the blind people. This is easy to implement because most of the blind people are using the smart phone today this can also be used in shopping malls, supermarket, medical stores.

Keywords: *Barcode, Camera , Product, Scan, Supermarket*

1. Introduction

When it comes to shopping, people who are blind or visually impaired have the same option as everyone has. By, using some alternative tips and technique, they can also shop independently with ease. Researchers wants to help visually impaired people to shop independently by creating mobile application and any other devices. Most of the super markets will not provide the braille on the product description, in that case blind people will face lots of difficulties while doing shopping .It is very important for the blind people to check the necessary details before going to purchase any product. Most of the time people around them will not be available to help them regularly. Now a days lots of visually impaired people started using smart phones as how the others are using. Smart phones are the convenient tool for those visually challenged people. We can use this advantage for blind people during shopping.

This application is completely developed to help the visually challenged people during shopping. voice guidance is implemented in this mobile application for using this in appropriate way. This is a an user convenient application . The product details are provided very clearly in audio. Voice guidance is necessary while doing mobile applications for visually challenged people. This application is designed completely for android mobiles. The identification of goods such as supermarket products and all is very useful for visually impaired person

2. Existing System

Barcode scanning applications are developed to scan the barcodes on the products and retrieve the data stored in the barcode id .ZXing (zebra crossing) that permits an Android mobile with capturing hardware to examine the barcodes and receive the data encoded. Information encoded often includes web addresses geographical coorelate and small pieces of text in addition to profit oriented product codes. This android based system has same performance to a hardware barcode reader. Many reading assistants are developed to help the blind people in the hardware format. RedLaser is an precise barcode and QR code scanner for your Android device. It can scan

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Data Accumulation with a Reduced Amount of Retard Requirements for Wireless Sensor Networks

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Abstract
Sensor systems, which are an assortment of heterogeneous sensors, are commonly used for military observation and natural checking yet they need data transmission, vitality and through requirements which limit their presentation. The restrictions of the remote sensor systems are overwhelmed by the information total which ad libs their vitality productivity and data transmission use. Information collection is the blend of information from various sources by utilizing capacities, for example, concealment, min, max and normal. We consider an information accumulation in WSN which empowers to help QoS prerequisites of uses. For this prerequisite, it organizes for separated administrations and conglomeration choice. Bigger the bundle size turns into, the more blockage would happen because of restricted channel data transmission and the normal start to finish delay additionally consequently expanded. To diminish the normal start to finish defer a Random Early Drop has been proposed.

Keywords: *Data Aggregation, WSN, QoS, Random Early Drop*

1. Introduction

Wireless sensor systems (WSNs) are increasing overall prevalence because of their wide applications in various conditions, including office, home, and threatening territories. Such WSNs may introduce a significant and proficient answer for testing issues, for example, building wellbeing checking, vehicle following, natural life following, and ecological Surveillance. Advances in micro electromechanical system technology (MEMS), joined with radio frequecy (RF) circuits and ease, low power digital signal processors (DSPs), improve practicality of these sensor systems.

A WSN may comprise of various sensors that sense information of intrigue and transmit the detected information, straightforwardly or in a roundabout way, to a remote database for additional preparing. The sensors in the WSN are generally power obliged and have restricted computational and correspondence power. Along these lines it might be attractive to amplify lifetime of the sensors under this limitation.

A WSN usually consists numerous nodes communicate through wireless channels which aids in

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A Novel Solution for Economizing Water by a Mix of Technologies with a Low Cost Approach

Dr. N.R .Rajalakshmi , Dr. M. Baskar ,P. Jayalakshmi, R.Thiagarajan, I. Mohan

Abstract

Normal water is some between our just essential assets so are usually herbal. It is usually under the influence of alcohol impact us, utilizes such because of cooking then cleaning, and yet relies above such between dense elements about our lives. For that purpose we assign conformity to remain managed then covered economically. It should not remain surprising, then, to that amount we've a need to stay the aggregate of lotos we use. During this paper we present brief records of mechanical water that is residential with shifting components like displacement and speed water meters. Thanks to this water that is traditional we cannot be ready to get the particular consumption of water. And also for multispecialty flats, utility and toilets are going to be located in several places so we cannot be ready to get the value that is cumulative of each and every flat. For solving these problems we are getting to introduce a meter that is digital. In order to get the flow consumption of each and every inlet of the flat through the digital flow meter and also we will be able to generate the accurate water consumption bill for every flat. And also, it's a special benefit of leakage revealing; unlock tap finding and no stream detection alarm. In order that we will be able avoid the entire leakage of water. We are able to monitor the info wirelessly. When no bill is paid we will automatically stop the water connection also. Thus, this paper will help us to try to water that is effective.

Keywords: water, consumption, water meters, stream detection alarm

Novel Technique For Automatic Billing In Smart Shopping

Dr.S.Arun, R.Thiagarajan, I.Mohan,V.Balaji Vijayan, R.Jothikumar

Abstract—Smart shopping will be creating a platform for smart city in future. This system is an automated one and even the billing can be easily made without the help of the cashier. It is a device which will be fitted in the PICk and drop basket (trolley) in the departmental stores, which is movable. The billing can be done through a swipe machine and also through net banking via their smart phones. Here we use RFID instead of bar code reader. Each item will be given a ID, so that the billing will be made effortlessly. Additionally the update of the product will be sent to the server. So if anyone of the product becomes null, it will send the intimation to the main server or master PC admin .Through GSM the bill will be generated to the customer's mobile number. Using ZIGBEE, communication is done from trolley to the main server. In our proposed system we use PIC microcontroller which is efficient in both cost and performance wise. The ultimate aim of this paper is automatic billing and progress towards Digital India. The customer's time can be saved and man power can be reduced.

Keywords—GSM, RFID, Automatic billing, ZIGBEE, PIC.

INTRODUCTION

As the world is exposed towards the advanced electronic environment we need to utilise it in a smart and efficient manner. This paper discuss about how a shopping can be done wisely with the help of some electronic devices. Many of the authors have come across with their ideas on smart shopping as in [1]. We have proposed our ideas in this paper by refering and considering their views and also highlighted them below. Here we are designing a smart trolley or a cart which be a user friendly and must be intractive to customers. The trolley comprises some of the components such as RFID tags on each products and reader on the trolley. We develop a database for every products,in which each have an unique ID.With the help of that the products are scanned and its price will be displayed on the device as in [2] – [5] and also will be helpful for the billing.To reduce the queue and man power a separate section is dedicated to the billing. This section consists of the system which receives the information from the trolley about the purchased product along with its details such as quantity, price, expiry date which are read by the RFID. The bill will be displayed at both the ends-the trolley and the system with the help of the ZIGBEE module, for the convenience of the customers,whether to continue or finish the shopping.The programming is done using the PIC microcontroller.The steps involved are given below.

1) As soon as the customer enters into the super market,he/she must give their customer details which includes their active mobile number for the security purpose and also for optional billling.
2) Payment of the bill can be done either through debit card or via net banking by the custormers. The customers can pay their bill amount either through net banking or via their debit cards. The total purchased amount will be received at the server side through wireless tansmission(ZIGBEE).
3) With the help of the GSM module the net banking can be implemented and the bill is generated to their mobile number.
4) With the help of the unique ID number of the product, it updates the server about the decrement of the products. Before the product gets nulled the shopper can refill those products and reduce the inconvenience caused for the customers.
5) In our proposed system we use some of the sensors for sensing the addition or deletion of products by the customer in the trolley. The updation is also done correspondingly.

When compared to the old existing system the queues can be avoided in this system and time can be reduced. The theft of the products can be avoided in such a way that the trolley cant move outside the billing section if any of the product is not read as in [6]. A message will be sent to the customer as the billing process is completed either through email or through mobile number of the custormer. It is recommended to the shop owners to motivate the customers to shop them using the smart trolley and give them offers and discounts on the products and based on the amount they purchase. All these details can be sent competely to the customer via the mobile number or through electronic mail. The automated billing is an advancement in any billing system in shopping malls, and will surely create an impact in reducing time as in [7].

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Smart Water Pollution Detection for Aquatic Life Protection using IoT and Mobile Cloud

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Abstract

Today one of the major environmental issues in India is water pollution. Due to the vast increase in global industrial output, the Canals, Lakes and Rivers in India becomes as a dumping grounds for sewage, solid and liquid wastes, by which the quality of water available has deteriorated greatly. When toxic substances enter water bodies, they get dissolved or get deposited on the bed. This results in water pollution, which affects the entire aquatic ecosystems and destroys aquatic life and reduces its reproductive ability, this becomes an notable issue to be addressed. The five parameters namely Dissolved Oxygen, Temperature, Salinity,Turbidity and pH are basic to life within aquatic systems. Impairments of these can be seen as an impact to the flora and or fauna with a given water body. To address this issue, In this paper, we propose smart pollution detector system based on IoT, where the recent revolutionary technology - Internet of Things (IoT) has the potential to turn virtually anything intelligent integrated with mobile technology. These five parameters are sensed through the parameter specific IoT sensors from the water environment and processed in condition with its threshold value for pollution detection which exceeds causes death to the aquatic life, Arduino UNO R3 is used as a core controller to process this sensed data and that processed resultant data is send to the cloud environment and a notification message to the mobile device application of the local authorities as an intelligent alarm to protect the aquatic life. This system requires a low cost for implementation and does not require people on duty, thus monitoring will be more economical, convenient and fast. It has widespread application for aquatic life protection and to build a smart environment.

I. INTRODUCTION

Many technology inventions evolved in the 21st century, but at the same time where pollutions, global warming and so on are being major environmental issues, causes more living risk factors for every living creatures. In 2017 November, the residents of Urur Olcott Kuppam - a fishing village in South Chennai had thousands of dead fish lay on the sand at the mouth of the Adyar estuary. Scores of dead fish had washed ashore at the same spot in January 2015, prompting government officials and journalists to rush to the village. A laboratory tests concluded that hazardous levels of sewage in the waters of the Adyar River had killed the fish. Pollution seems to be the killer this time, according to the research body Central Institute of Brackish water Aquaculture, which is studying the incident [1]. Eradicating water pollution altogether may seem like an unfathomable notion but reducing its effects when it does happen is certainly possible[2]. In the recent developments in technology enables devices to interconnect, interact in and through internet to act smart for decision making according to the environment context. IoT - Internet of Things, creates an intelligent interconnectivity between the digital world and the real world environment.

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CLASSIFICATION OF EMOTIONAL STATES USING ECG SIGNALS AND SVM

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Abstract: Emotion identification improves communication between humans and machines. Thus Human-Computer Interface that is engaged for various real-time uses will be additionally useful if emotions are merged in the scheme. Generally, it is a complex procedure to decide and group emotional situations. Emotional variations in human beings take significant influence on human fitness, hence defining emotions with high precision is essential. The core aim of this effort is to increase the efficiency of emotional state classification. Hence, this effort, groups emotion into two as favourable emotions and unfavourable emotions. The classification efficiency can be improved with accurate input data, appropriate features and efficient classification algorithms. The ECG data used for analysis are taken from physionet ECG database, and a capable Support Vector Machine (SVM) classifier is utilized. Classification efficiency is further improved by selecting appropriate ECG signal features. Thus from the analysis, it is observed that two time-domain characteristics and three frequency domain characteristics, thus a total of 5 features, can competently group the two emotional states as favourable emotions and unfavourable emotions.

Keywords: emotional state, ECG, SVM.

Introduction

The interface between machine and humans is applied in several real-time industrial applications, telemedicine, automation applications etc. These applications will be practical only if information transfer is without error. There is an impact of emotions on cognitive development of brain-like such as knowledge, retention, etc. The unfavourable emotions like anger, stress affects human fitness and is responsible for various disease caused by human beings. Hence emotions influence the physiological signals, expressions on the face, speech etc. [1]. Agrafoti [2] proved in his work that ECG signals are better in identifying the emotional state compared to other methodologies.

The Parasympathetic Nervous System (PNS) and Sympathetic Nervous System (SNS) produces various grades of arousal for dissimilar kinds of emotions, thus considerably performs as a practical sign for dissimilar groups of emotions [3]. The emotion identification system consists of three major blocks, data acquisition, feature extraction and classification. The data for this work is obtained from physionet database. Various categories of emotions are grouped into two categories, positive and negative emotions, and the classification method used is Support Vector Machine, that is proved to be an efficient classifier for emotion detection [4]. The foremost aim of this work is to determine the effective HRV characteristics, to enhance the precision of the emotion classification scheme.

Methodology

Figure 1 displays the basic block diagram of the emotion categoriation scheme.

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Industrial internet of things (iiot) - an iot integrated services for industry 4.0: A review

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Abstract

Internet of Things (IoT), an inter-connecting technology comprising devices, objects, information, people and data, as a global internetwork for building intelligent systems. Such systems play a vital role in automating data sensing, machine and manufacturing process monitoring, product quality checking and lactation based smart shipping in real world industrial environment with integrity and interoperability. Industrial Internet of Things (IIoT) provides the integrated development environment for industries to build intelligent interconnected systems that uses the various IoT devices and bring the cyber and physical world together with higher level of availability and scalability. In this paper, we reviewed the transition of various IoT based systems to IIOT with the insights of concepts, devices and technologies of IoT and IIoT integrated applications which outlines the various trends and applications of Industry 4.0.

Top

Keywords

Industrial IIoT, Industry 4.0, IoT Integrated service, Smart factory.

Top

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ROBUST MALWARE DETECTION FOR IOT USING DEEP EIGEN SPACE LEARNING

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Abstract - *In Internet of Things (IOT) devices there are numerous risks found by Security experts on organisations . Widespread adoption of such devices, their diversity, standardization obstacles, and their inherent mobility are the main cause for the risk. An intelligent mechanism which automatically detects suspicious IOT devices connected to their networks have to be made used by the organizations. In particular, devices are not included in a whole list of trustworthy IOT device types (allowed to be used within the organizational premises) should be detected. There is a compelling need to mitigate bias and evaluate methods for effective zero-day malware detection.in the proposed system, deep neural networks are used to accurately identify IOT device malware from the considered dataset. The dataset considered for the study is the publicly available dataset Emper Opcode is used with a subset containing 70,410 benign and 69,860 malicious files. We proposed to achieve high accuracy in our proposed system.*

Keywords- **Data pre-processing, Deep learning model, Training evaluations, Prediction module.**

1. INTRODUCTION

The Internet of Things is provided diverse benefits in every aspect of our lives. Due to this there are so many distractions in hacking certain data's. though typical vulnerabilities and expected proliferation worldwide, then both of these risks and the projected global impact of connecting IoT devices to the network in any modern environment becomes clearly evident. If we take a cause of IoT, there is a stable vulnerability. To detect data which was hacked by certain unknown can locate the detection. IoT devices in a civilian setting includes health, agriculture, smart city, and energy and transport management systems. IoT can also be deployed in adversarial settings such as battlefields. IoT provides a sensor device, Internet –connected vehicles and other systems which automatically store sensor and transfer the collection of processed data. The IoT may have intellectual in using the devices which can be monitored and controlled by mechanical, electrical and electronic devices. Then there are various devices have built in a home automation and building automation systems.

It can be acknowledged by securing the malware from detection in which IoT can give path to private the data's. Though IoT is sensitive nature it can be attacked by criminals. These attackers are well professionally trained about the resources of data and stating about the attacked data's.

The detection can be done with two active research areas, Intrusion and Malware Detection. The IoT and IoBT resources are drained with these active operating systems. In real world, these detected areas are dependent in deploying the data. IoT malware systems have vulnerabilities in low nature or due to exploit these comprised devices. It reports the target device to consume the malware devices such as applications. Then it can give better performance for malware detection.

Hence there is a future interest in utilizing due to their potential to increase detection accuracy and robustness. The Differentiate of detection can be taken as benign and malware. The benign can have secure data's and malware can have attacker's data. These can be filtered into test and trained data.it can give an accuracy of attacked file. Typically, the following criteria are used to evaluate the utility of machine learning and deep learning techniques in malware detection:

True Positive (TP): can be identified correctly as malware in malicious application.
True Negative (TN): can be identified correctly as benign in non-malicious application.
False Positive (FP): can be identified falsely as benign in malicious application.
False Negative (FN): can be identified falsely as malware in non-malicious applications.

2. RELATED WORK

Recently, The IoT device dataset can be mitigate and detect the malware evolved in various fields. The Research scientist can imitate new techniques to detect the cyber-attack. The present focuses on the IoT devices which may be risk free. In the proposed work, we considered the IOT device dataset for classifying it to benign or malware using deep neural networks. Deep learning enables rigid progress in classification of image processing, data pre-processing, data coloration. This should be taken cyber-attack surface do not contribute such enabled devices to make sure smart devices or smoke detectors, forest fire attackers, traffic detectors facilitate savings of power and so forth.

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Instant Response for Healthcare by Machine Learning

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Abstract – The terminology cleft between prosperity searchers and providers has disturbed the cross-structure operability and the between customer reusability. To framework this gap, this paper shows a novel intend to code the therapeutic records by together utilizing adjacent mining and overall learning schemes, which are solidly associated and regularly sustained. Close-by mining tries to use the individual remedial record by openly isolating the restorative thoughts from the therapeutic record itself and after that mapping them to validated phrasings. A corpus-careful stating vocabulary is really created as a symptom, that can be used as the wording space for overall learning. Neighborhood mining approach, in any case, may encounter the evil impacts of information disaster and lower exactness, which are expedited by the nonattendance of key restorative thoughts and the region of immaterial helpful thoughts. Overall adapting, of course, moves in the direction of updating the area remedial coding by methods for agreeably finding missing key phrasings and keeping off the unnecessary phrasings by separating the social neighbours. Broad examinations well acknowledge the proposed arrangement and every one of its part. In every way that really matters, this unsupervised arrangement holds possible to broad scale.

Index Terms – Cross-structure, Corpus-careful, Information disaster, Neighborhood, Therapeutic record, Social neighbours, Symptom .

1. INTRODUCTION

Information headways are changing the manners in which social protection organizations are passed on, from patients' inertly getting a handle on their authorities solicitations to patients' viably searching for online information that stresses their prosperity. This example is additionally asserted by a national report driven by the Seat Exploration Center1 in Jan 2013, where they revealed that one out of three American patients have gone online treatment to understand their restorative conditions in the past a year from the report time. To more readily consider prosperity searchers, a creating number of gathering based social protection organizations have turned up, tallying HealthTap,2 HaoDF3 and WebMD.4 They are scattering redone prosperity learning and uniting patients with authorities generally by methods for request taking note of These get-togethers are extraordinarily charming to the two specialists what's more, prosperity searchers. For specialists, they can increase their status among their partners and patients, sustain their rational gaining from associations with different esteemed authorities, and likewise maybe pull in extra new patients. For patients, these structures give nearly minute and confided in answers especially for unpredictable and refined issues. Over occasions, an immense number of therapeutic records have been gathered in their stores, besides, a great part of the time; customers may particularly discover shrewd reactions by means of looking for from these record accounts, rather than sitting tight for the authorities' responses or looking over a summary of perhaps material records from the Internet. Overall, the gathering made substance, on the other hand, may not be clearly usable due to the vocabulary opening. Customers with various establishments don't as a make a difference obviously share a similar vocabulary. Take Wellbeing Tap as a case, which is an inquiry noticing site for individuals to ask and respond prosperity related request. The requests are made by patients in story lingo. A similar request may be depicted in impressively particular courses by two man prosperity searchers. On the opposite side, the appropriate responses gave by the inside and out arranged masters may contain short forms with different possible ramifications, and non-standardized terms. Starting late, a couple of goals have encouraged authorities to elucidate the restorative records with remedial thoughts. On the other hand, the marks used frequently move furiously and restorative thoughts may not be therapeutic phrasings. For example, "heart ambush" and "myocardial unrest" are used by different pros to suggest a similar restorative end. It was exhibited that the anomaly of gathering created prosperity data fundamentally disappointed data exchange, organization and uprightness. Shockingly more horrendous, it was represented that customers had been encountered colossal troubles in reusing the field content in view of the conflictingly between their request terms and those totaled helpful records. As such, normally coding the therapeutic records with organized wordings is exceedingly needed. It prompts a solid interoperable way.

2. RELATED WORK

A substantial part of the present prosperity providers deal with

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Prediction and Pattern Identification of Crime Data using Data Mining Techniques

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Abstract
Data Mining is used to extract knowledge information from a large amount of data. Due to the frequent occurrence of crime in India it is the need of the hour to detect crime and bring up a model that helps in prediction of crime. Hence crime analysis needs a systematic approach to identify various patterns occurrence. Hence data mining techniques are used to carry out this process in an accurate and effective manner. Due to the large available of techniques it is very mandatory to choose the appropriate method to carry out this process. This paper address the challenges and issues in different algorithm and provides the comparison in bringing up the suitable technique for crime model detection. It gives us a good amount of clarity in choosing up the appropriate techniques. Added to this some algorithms are proposed and found to be efficient when compared to other techniques.

Keywords: *Decision, Data Mining, Pattern identification, Crime Analysis*

1. Introduction

In current scenario when we see crime rate it keeps increasing day to day. When coming to the point of detecting and preventing crimes, it is really difficult since it is not in same sequence or at random manner. Due to advancement of technologies even the crime doing people are using high-tech tools to get escaped without being caught. To solve these types of issues various research studies have provided different techniques to sort out these crimes. By using these techniques investigation department will be able to detect the scenario and investigate the crime. When considering the crimes, murder, sexual abuse, stealing, rape etc have increased in due period. This situation is prevailing due to the case that either the crime doing people have lost the fear of punishment or investigation team needs more advancement in finding out the crimes well in advance. When it is difficult to predict who and all have involved in doing a particular crime it is said to be that probability prediction of crime occurrence can be done. But once the result is out, we are not sure of 100% accurate about the result and able to achieve security in fraudulent areas and alert zone. To bring up a powerful analytical tool it is mandatory to have more number of evaluations of crime data in detail.

Hence to provide solution for these problems mentioned above we can use data mining which can extract useful information and hidden patterns from a large amount of data. Using the extracted information we would be able to find the scenario of crime happening, pattern and frequency which helps us predict the crime in advance. By using these techniques we would be able to get benefitted in two ways: one is to solve the crime and investigate, get results fast and other one to do automatic crime detection. For our notice, only for few decades we found to use spatial data mining to be an apt solution for a large amount of data. The data related to the crime is not present s a whole in repository hence it is collected from various resources like web, blogs, news sites, social media etc. This data is been stored and labeled as crime database. After collecting the large amount of data, now our primary focus is to bring up an efficient, accurate pattern recognition tool for detecting crime. But in this type of process there are certain challenges and difficulties listed:

- Due to large amount of crime existing day to day we need to store and analyze.

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Grab Your Yield on Stock Market Using Sentimental Analysis and LSTM using ARNN

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Abstract
Stock market refers to an auction. Investors who can buy and sell shares of corporate stocks. The values of stock are very complex to predict. Moreover, accurate prediction of stock is greatly difficult task till now so that the stock price of a company depends on various parameters such as fame of the company and other sudden non-predictable events that may cause neural disasters etc. In our project we are predicting the stock with the help of Machine Learning and Artificial Recurrent Neural Network approach. In this we are having two approaches to predict the values of stock. First one is Advanced Long Short-Term Memory (LSTM) approach and second one Sentimental Analysis approach. Sentimental Analysis uses Twitter API to predict the values of stock. By above problem understanding, this product is developed to provide the accurate values of stock rather then giving the irrelevant stock values.

Index Terms: *Long Short-Term Memory, Neural Networks, Twitter API, Sentimental Analysis.*

1. Introduction

Stock market rate is one of the far most prominent fields in the sector of computer science, economics, accounting and management, etc. Stock market one day ahead has been a desire of many dealers. "To what scope can the history of a typical stocks cost be used to form valid predictions regarding the future price of the stock. However, information concerning a stock is normally uncertain, vague and incomplete making it is a dare to predict the future economic performance. Accurate stock market predictions are very important. Still after many attempts by scientists, No methods which can successfully predict the exact stock price can be created. The difficulty of prediction is due to the complexities of. modelling market dynamics per mining the stock market this is because stock price not only depends on the import/export of the company but also name and fame of the company. To predict stock value, we must plot the stock indexed with respect to time, this method of plotting time series on a graph is called as time-series forecasting.

This time series will be created as a model We train this model on the history of data which we have retrieved and use this model to predict the future values. This can be done with the help of Machine Learning algorithms. In this paper we are using the most popular and importantly used model Artificial Neural Network (ANN). ANN is the basic framework for most of the Machine Learning algorithms used till the date[1]. Among this framework we are using Artificial Recurrent Neural Network(ARNN). ARNN is the special kind of ANN which are powerful and robust type of network and belong to the most promising algorithm. Because of their internal memory, RNN have enough strong memory decide and remember the important contents from the input they acquires[4].LSTM is a most remarkable algorithm a time series based prediction due to its better remembering capabilities for Long and Short Term using their memory gates. In this research we also hypothesize that sentimental analysis is also used to give the effective results when certain non-

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Prediction of Human Brain Tumor Based on Machine Learning

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Abstract

Nowadays the medical image analysis faces severe problem for identify the disease in the human body. There are various cancers affected the human life which are detected in early stages. Brain tumor is a disease which spreads across the human brain which leads dangerous illness issues. The present study of the brain tumor provides the complete information about the medical image analysis. MRI images are taken for the tumor analysis which starts with image retrieval from the sources. Various image detection algorithms are analyzed and compared based on the region identified during the process of image segmentation. The raw images are smoothening using various kinds of filtering level. The tumor is classified based supervised machine learning algorithm over binary and multi class classification with efficient algorithms. Clustering of the image pixel with intensity levels is considered for locating the tumor region. Learning method takes different kind of MRI images for predicting the Image in accurate manner. Neural network based analysis of the brain tumor with deep hidden layer performs large number of images for improving the detection accuracy. The overall objective of the analysis is to understand and detect the tumor in early stages which helps the doctor for accurate diagnosis.

Key words : *Brain Tumor Analysis, Image Segmentation, Image Enhancement, Machine Learning, Deep Learning, CNN*

Introduction

The human body functions are controlled by brain and spinal system which leads the human day to day activities. Brain has various parts such as cerebrum, cerebellum and stem of brain. Cerebrum controls the body in opposite side which is divided into four lobes. The functions are controlled and coordinated using cerebellum. Stem part is connects the spinal and cerebellum. There are three layers which covers the brain us called meninges. The brain tumors are classified as primary type and secondary type. Primary types of tumors are directly starts with the brain which again categorized into low grade tumors and high grade tumors. Low grade spread slowly where as high grade grows very faster. Secondary type starts any parts of the body then moves to brain and affects the brain. The classification of the tumor is done based on the age groups of the person such as adult and children. The adult types of cancer are divided into gliomas and non-glioma. This category is depending on the glial cells of the brain. Gliomas type cancer starts with glial cell where as non-glioma types is not form glial cell. The brain cancer causes the problem in various part of the body which leads the high risk factor for living. The symptoms of the brain tumor is depends on various aspects they are headaches, change in memory power, lack of problem understanding ability, less concentration, they often changes mood level , visibility problem and changes in the human body. Diagnoses of the brain tumor is done by carry out self checking, physical

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Smart Vehicle Monitoring System using IoT

M.D. Boomija, T. Saranya, S. Suganthi

Abstract

Nowadays people are moving towards innovative techniques in order to find a smarter way to protect and monitor their vehicles. In case of existing technology, vehicle monitoring mainly focus on the indoors or it focus on the outdoor by using different techniques and devices. Several solutions have been proposed to adopt a single location tracking technology that fits in both situations. In our system we have used Internet of Things (IoT) for monitoring the vehicle movements in real time application. At the level of implementation RSSI, micro controller and global system for mobile communication has been used that will help the owner to monitor their vehicles in a safer manner. The proposed system aims at monitoring the vehicle position by using single wireless RSSI (Received Signal Strength Indicator) device.

PDF

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Section
Articles

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Enhancing the Performance Analysis of Large Capacity Power Plant using Electrical Transient Analyzer Program

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Abstract:
An electrical power system is a group of electrical components employed to generate, transfer and delivery of power. An electrical network is a quite large network where it is interconnected to various components such as generators, distribution transformers,compensating devices and loads. Such type of large network should be stable at occurrence of various disturbances and fault condition. For stability of power system, various studies and analyses need to be performed. Power system analysis is most important in the power system to develop and design a new power system. In this project, we design a modal CCPP on ETAP and to enhance the performance of 1240 MW CCPP. An electrical network affected by voltage variations. To point out the under-voltage buses, load flow analysis will be performed and their voltage levels are improved within the specified voltage constraint. Finally, short circuit analysis is performed on ETAP and the outcomes of short circuit analysis are compared with validated outcomes of short circuit current.

Keywords: *combined cycle power plant, load flow analysis, voltage stability analysis, short circuit analysis, Electric Transient Analyzer Program.*

INTRODUCTION

The power system is a collection of components used to generate, distribute and transfer electric power. Generator is one of important component of power system. It converts mechanical energy into electrical energy. Climate change may affect the power system. Therefore, it is essential to investigate power system to have safe and consistent power under normal and abnormal conditions. The power system studies such as load flow, voltage stability and short circuit are needed for augmentation of power system in future.

Load flow study is the analysis of poer system in steady state condition. It assess the power and voltage of steady state at different buses. The objective of load flow study is to estimate voltages at different buses and power added to the transmission system.

The short-circuit study or fault study involves the process of estimating magnitudes (Amplitudes) of different faults may occur in our facility. This includes 3 phase faults, ground faults, line-to-line faults, and line-to-line-to-ground faults. These faults are simulated under many different scenarios and operating configurations of our system.

Power system stability means that its ability to resume to stable state after have been exposed to some abnormal conditions. Instability defined as the state of loss of synchronization of machines. Hence, stability of power system alludes to maintain safe and synchronous operation.

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High temperature superplasticity and its deformation mechanism of *AA6063/SiC$_p$*

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ABSTRACT

Superplastic forming is primarily used for thin-walled and complex shape structures. This process is much successful in industries mainly for the fabrication of intricate components used for aerospace and automobile industries. In this paper, superplastic forming behavior and microstructural evolution in Al/5%SiC$_p$ composites were studied at different temperatures through the hot tensile test. In a hot tensile test, a maximum elongation (i.e., 227%) was obtained at the 580 °C temperature condition. When the temperature was more than 580 °C, the elongation was reduced to less than 100%. Similarly, when the temperature is adjusted to a value lesser than 550 °C, the reduction in the elongation is seen which is less than 100%. Here, the microstructure study of the test samples is studied through the optical microscope. From the microstructure analysis, the grain refinement is taken place by dynamic re-crystallization and the intergranular deformation with grain boundary sliding is observed. It is understood that, the dynamic re-crystallization and grain boundary sliding increases the percentage of elongation and on the other hand the ductility reduces due to the presence of excessive liquid phase at the grain boundaries.

1. Introduction

Discontinuously strengthened metal matrix composites are engaging for several structural applications due to their high specific strength and their modulus of physical property. Discontinuously reinforced aluminum (Al) metal matrix composites having superplastic forming behavior at high strain rates are most preferred in many industrial applications. In industries, superplastic forming has been done successfully in the fields of aerospace (say for example aircraft structures) and automobile industries [1,2]. For the past two decades superplastic forming playing a major role in manufacturing industries. Superplasticity could be a development exhibited by certain metals that expresses outstanding plasticity beneath specific conditions of forming [2–4]. Superplastic forming presents probably an engaging alternative to alternative forming techniques, and this is due to the low flow stress characteristic of superplastic deformation, and low tooling price. The tensile plasticity of Al composite strengthened with silicon carbide particles (SiC$_p$) has shown the concern of elongation up to 300%. Blow kindling is often accustomed form metal sheets beneath superplastic conditions. Superplastic behavior of a composite is primarily assessed by mistreatment either uniaxial or line testing. Research has been conducted to check and appraise the superplastic behavior of Al/SiC$_p$ at high strain rate [1,4]. Mechanical properties like enduringness and hardness tend to induce at elevated temperature [5]. Studies have shown enhancements in material properties with improved creep

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Articles

Experimental performance investigation of *Partially Stabilized Zirconia* coated low heat rejection diesel engine with waste plastic oil as a fuel

P. Saravanan, D. Mala, V. Jayaseelan & Nallapaneni Manoj Kumar

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Effect of Silicon Coupling Grafted Ferric Oxide and E-Glass Fibre in Thermal Stability, Wear and Tensile Fatigue Behaviour of Epoxy Hybrid Composite

Arun Prakash V R, Jayaseelan V, Mothilal T, Manoj Kumar S, Melvin Victor Depoures, Jayabalakrishnan D & Ramesh G

Silicon **12**, 2533–2544(2020)

Abstract

In this present study the effect of adding silicon coupling grafted ferric oxide and E-glass fibre in thermal stability, wear and fatigue behaviour of epoxy resin hybrid composite was investigated. The principal aim of this research was explicating the importance of silicon coupling grafted E-glass fibre and ferric oxide particle in thermal stability, wear and fatigue properties of epoxy hybrid composite. Ferric oxide particles of 800, 200 and < 100 nm and E-glass fibre of 600 GSM was used as second phase additions in epoxy resin with surface grafted condition. The surface grafting was done using 3-

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Microarticle

Experimental investigation on bi-axial superplastic forming characteristics of AA6063/SiCp with various percentages of SiCp under various temperatures and pressures

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ARTICLE INFO

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ABSTRACT

In the superplastic forming process (SFP), exceptional formability can be achieved. The formability in SFP is far superior when compared to traditional methods. Through SFP, the most complex shapes with high dimensional tolerance were formed. In this article, bi-axial superplastic forming was conducted after the rolling process on various percentages of silicon carbide composite (SiCp) particles in the gas pressure forming tester. Results of this study are mainly focused on finding favorable forming parameters (temperature, pressure, and time) for the superplastic formability of various Al/SiCp prepared by the stir casting process.

Introduction

Aluminum matrix composites (AMCs) refers to the class of light-weight, high-performance Aluminum centric material systems [1]. The research progress seen in the three decades greatly improved the physical, mechanical, thermo-mechanical, and tribological properties of AMCs [2]. However, this research progress is mostly limited to typical applications. In the last few years, the use of AMCs in high-tech structural and functional applications including aerospace, automobile, marine, transportation, mineral, defence, automotive and thermal management areas, as well as in sports and recreation became widely accepted. In most of the applications, the need for complex shapes with excellent dimensional tolerance is very high. Superplastic forming process (SFP) is one of the cheapest forming techniques that is widely used to form these types of complex shapes. Through the SFP, high dimensional tolerance and exceptional forming were obtained. Proper grain refinement will give good formability in the materials. Thermo-mechanical treatment and grain refinement technique will improve the properties of superplastic forming. Through proper grain refinement in Aluminum-based alloy, the maximum elongation of more than 700% can be obtained. Formability in superplastic forming was obtained through mechanisms like grain boundary sliding (GBS), diffusion. Maximum 60–70% of superplastic forming was obtained through GBS mechanism [3–7]. However, achieving formability is challenging, and at room temperatures, the formability of composite is difficult due to its brittle nature. For avoiding the difficulties, a proper selection of SFP parameters such as pressure, temperature, and time is needed. Many have studied on such conditions, especially to achieve good formability in the Aluminum silicon carbide composites (Al/SiCp) [5,6,8,18]. The objective of this work is to find the favorable forming parameters such as temperature, pressure, and time in the superplastic forming of various percentage Al/SiCp composites.

Experimental details

A stir casting process (SCP) was used for preparing the composites. Fig. 1 (a) shows a schematic diagram of the SCP. An electric motor is fixed at the top of the furnace to provide stirring motion to the stirrer, and by using the speed controller setup, different stirring speeds were obtained. The SiCp preheated to a temperature of 1000 °C by Resistance furnace before it is mixed with the molten Aluminum alloy, which is done using an electric furnace [9]. The heat treatment on SiCp was done to form a layer of SiO2 on the SiCp, which improves the incorporation of the SiCp into the hot molten metal. The material is

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Low Velocity Impact and Mechanical Behaviour of Shot Blasted SiC Wire-Mesh and Silane-Treated Aloevera/Hemp/Flax-Reinforced SiC Whisker Modified Epoxy Resin Composites

M. Arul Murugan, V. Jayaseelan, D. Jayabalakrishnan, T. Maridurai, S. Selva Kumar, G. Ramesh & V. R. Arun Prakash

Silicon **12**, 1847–1856(2020)

Abstract

In this research the effect of adding silicon carbide nano whiskers (SiCw) into epoxy resin and the impact of reinforcing surface treated SiC wire-mesh (SiCwm) and woven aloevera/hemp/flax fibers (NF) were studied. The principal aim of this work was demonstrating the importance of adding SiCw (0.5 and 1.0 vol.%) and SiC wire-mesh with economical natural fibres (50 vol.%) and silane surface treatment on natural fibres in mechanical and low velocity impact behavior. The SiCw and natural fibres were surface treated by 3-

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Macro Assisted Design Automation of Piston & Connecting Rod Using Solidworks API

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Abstract
The Solidworks API and macro feature enables engineers to create custom programs and applications (macros) that can be used in automating many of the tasks of CAD & CAE. The macro enables us to do varied tasks from creating a standard drawing sheet for shops in a single press of a button to generation complex design features. This enables the owners from small scale industry to generate drawing sheets just by providing input values of the dimensions. The aim of the project is to create an application for generating drawing sheets as outputs for given inputs of ENGINE PISTON & CONNECTING RODS without complex design steps.

Keywords: *Solidworks, API, Visual Basics, Macros, Piston, Connecting Rod, Piston, Drafting, CAD*

1. Introduction

CAD Modelling is a time consuming and tedious process which every industry tries to minimize cost as far as possible. Conventional way of designing for industries is to hire a designer and create a design based on their requirements. It is high time and money consuming process. For creating a new design conventional process is efficient but for old design with some modification in dimension, conventional process will not be effective. Here we are going for the Piston and Connecting Rod Sub assembly which can be easily modeled, assembled and drafted to industry standards with just by entering the dimensions in a custom-made user interface which can be accessed with the help of macro within the Solidworks.

The main idea of this paper is to create a design template for every design which need a slight modification in dimensions. Solidworks has a future called API (Application Program Interface). SOLIDWORKS Application Programming Interface (API) is simply libraries which are exposing the public functions to be used by 3rd party software for invoking the SOLIDWORKS macro commands. Programmers use the functionality of Solidworks API in order to automize certain design process and also modify the different modules whenever needed. Solidworks API functionality can be used in almost all design needs in CAD with some exceptions and limitations. It is also possible to manipulate the User Interface of the final Application as per need. SOLIDWORKS API is used by SOLIDWORKS partners to develop bespoke solutions. The methodology is simple and easy to understand. All we need to do is record in a solidworks macro and modify the acquired code as per need. The final application will call for a fully compiled set of codes which can. Alteration of the program can be with little knowledge of Visual Basic for Applications or Visual Studio.

2. Design Automation- A Brief

Design automation is the process of using predefined set of codes which can be used to run automatic design steps which usually takes a lot of time in real time manual design process .The process of creating such applications can be made easier with the help of traditional CAD methodology. Through this CAD techniques, previous

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ANALYSIS OF REJECTION OF SQUARE PISTON AND ITS REMEDIES

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Abstract: *In current trends improving and increasing the productivity of the product is very essential to survive in the markets in case of any successful company. The understanding of the quality system must be done in a better methodology. The product variation and the process operational cost can be reduced by improving the method of optimization in terms of the quality method. In order to reduce the rejection rate as well as to give suggestions for improvement of the product we intend to apply quality control tools in the stages of the production process. In terms of any manufacturing company the company faces crisis in terms of having the part rejected after the process of manufacturing which both directly and indirectly affects the cost of the company. Companies may suffer deliberately from problems especially from high rejection as well as rework in the production processing lines. The various process parameters such as the machining operations, grinding, workpiece material etc. influence the product to be controlled and have high aspects in term of the quality of the product as well as give a brief improvement over the process. The common goal in any industry is to reduce the rejection. The process of rejection analysis helps in the identification of the problems that occur with quality as well as the production of the components in an industry which serves as an important key point in terms of the manufacturing processes.*

Keywords: Rejection, Quality, Production, Manufacturing.

INTRODUCTION

The seven tools of quality can be used where they can provide the significant cause as well as to identify the various methods, steps, process as well as the introduction of new solution for the probable cause. These tools are enlisted and is used highly in terms of quality as well as maintaining standards of the company as well as the product.

The seven QC tools are:

1. Stratification (Divide and Conquer)
2. Histogram
3. Check Sheet (Tally Sheet)
4. Cause-and-effect diagram ("fishbone" or Ishikawa diagram)
5. Pareto chart (80/20 Rule)
6. Scatter diagram (Shewhart Chart)
7. Control chart

PISTON FOR HYDRAULIC PUMPS

SQUARE PISTON

Figure 1 SQUARE PISTON AFTER ASSEMBLY

Finishing	-	Polished
Use	-	For Tractor
Product Type	-	Piston
Material	-	Cast Iron
Part Type	-	Pump Part
Surface Treatment	-	Coated
Weight	-	50-150 Grams (g)

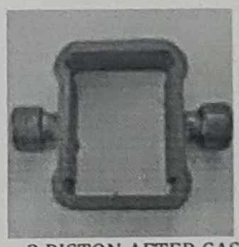

Figure 2 PISTON AFTER CASTING

Figure 3 PISTON AFTER MACHINING PROCESSES

FLOW CHART

Flow Chart is one of the primary tools of the New Quality Tools Where the various process as well as the method are identified using a flow model for clear understanding. The flow chart is used to identify the various stages as well as the process nature and its timeline.

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REJECTION ANALYSIS IN FUEL EQUIPMENT

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Abstract - *In today's modern day world there is an increase in the demand for the quality of any manufactured product. Customers nowadays hope to get full quality products so as to meet the desired characteristics and thus in this regard customer satisfaction becomes the major target for any company. So it becomes necessarily important to identify the number of rejections which takes place within the company and also provide the suggestions to reduce these if needed. In general rejection analysis refers to the identification of the quality of any part or component and to ensure that the part accepts to the notified dimensions and tolerances provided. The part which does not fall within the specifications must be rejected if it cannot be reworked. This study deals with the quality issues faced in the manufacture of an advance housing also known as AA housing. After studying the various machining processes involved in the advance housing the defects and their reasons were noted and also the rejection rates due to each defect were studied. Using Pareto analysis, the defects with highest percentage of rejections were found. The Ishikawa diagram also known as the Fishbone diagram for the highest defect was plotted and the root causes were identified as a result. The control charts are plotted so as to figure out whether the component dimensions are within the upper control limits and lower control limits. Why-why analysis is also done for the above mentioned advance housing which helps to figure out the root causes of any problem. It finds the often hidden causes of the problems. Finally our suggestions are provided for minimizing the defects and rework which can help to reduce the rejection rate by a fair margin.*

Key words: Rejection Analysis, Advance Housing, Pareto Analysis, Ishikawa Diagram, Root Cause, Why-Why Analysis, Control Charts.

1. INTRODUCTION

Any manufacturing industry will always look to please their customers so that they retain their value in the global market. To achieve this, the companies start manufacturing thousands of parts every day so as to meet the required number of quantities, but in this process the quality of the product goes unnoticed at times. The decline in quality is due to the different type of defects that are associated with an advance housing. The different defects observed are rust, blow holes, improper drills, tool markings etc. The frequencies of the defects are noted down and the Pareto diagram is drawn based on the obtained data of rejection.

In the Pareto diagram the defects are arranged in decreasing order of the occurrences. The Pareto diagram is based on the Pareto principle which states that a few of the defects accounts for most of the effects. It is also called as 80/20 rule which means that 20% of the problems account for 80% of the effects. The fishbone diagram is a tool which finds out the reasons for variation, failures or defects. It is called as a cause and effect diagram where the effects are usually mentioned in the right hand side of the figure while the causes leading to it are written on the left side of the figure. The six main causes for any problem are classified as method, measurement, people, environment, machine and materials. These are called the primary causes.

To carry out this project, we took the help of M/s Jay Engineering Works located in Ambattur, Chennai. Using Pareto analysis, the defects with highest percentage of rejections were found. The advance housing is an integral part of the fuel injectors used in the diesel engines. The main function of the AA Housing is to pressurize the fuel before it enters the combustion chamber for the burning of fuel to take place. The raw materials for the manufacture of an AA housing are provided by Delphi TVS. The manufacturing of an AA housing has 20 processes which is done machines like CNC (computer numerical control) and VMC (vertical milling center). The operations like facing, turning, boring and drilling are done in CNC machines and slotting, tapping are done in VMC machines.

The why-why analysis is done to figure out the root causes to any problem. In this, initially the problem is laid out at the top and the subsequent causes to the problem are mentioned vertically downwards, which means the causes are noted down for the preceding problem. The control chart is the most widely used tool in statistical process control(SPC). It displays data taken over time and the variations of this data. Control chart can be used to check whether the process is being controlled statistically.

2. LITERATURE REVIEW

Rohit Ravasaheb Shinde et al [1] stated that this paper makes use Of Failure Mode Effect Analysis (FMEA) to adopt the innovative technologies integrated with the operational aspects in order to enhance the process capability. The main objective of the study is to improve machinery system reliability and its performance. The Pareto analyses were done to select the type of bush and

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SMART CROP PROTECTION SYSTEM FROM ANIMALS USING PIC

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Abstract - *Crops in farms are many times ravaged by local animals like buffaloes, cows, goats, birds etc. This leads to huge losses for the farmers. It is not possible for farmers to barricade entire fields or stay on field 24 hours and guard it. So here we pro- pose automatic crop protection system from animals. This is a microcontroller based system using PIC family microcontroller. This system uses a motion sensor to detect wild animals approaching near the field. In such a case the sensor signals the microcontroller to take action. The microcontroller now sounds an alarm to woo the animals away from the field as well as sends sms to the farmer so that he may know about the issue and come to the spot in case the animals don't turn away by the alarm. This ensures complete safety of crops from animals thus protecting the farmers loss*

Key Words: PIC Microcontroller, GSM Module, Sensor

1. INTRODUCTION

In the world, the economy of many countries is dependent upon agriculture. Inspite of economic development agriculture is the backbone of the economy. Agriculture is the main stay of economy. It contributes to the gross domestic product. Agriculture meets food requirements of the people and produces several raw materials for industries. But because of animal interference and fire in agricultural lands, there will be huge loss of crops. Crop will be totally getting destroyed. There will be large amount of loss of farmer. To avoid these financial losses it is very important to protect agricultural field or farms from animal and fire. To overcome this problem, in our pro- posed work we shall design a system to prevent the entry of animals into the farm. Our main purpose of project is to develop intruder alert to the farm, to avoid losses due to animals and fire. These intruder alert protect the crop from damaging that indirectly increase yield of the crop. The develop system will not harmful and injurious to animal as well as human beings. Theme of project is to design a intelligent security system for farm protection by using Embedded system.

1.1 PROBLEM IDENTIFICATION:

In the proposed system, Crop monitoring is done where sensors are used to collect in- formation in the agricultural field. In our proposed work, PIC, Motion Detecting Sensor and GSM is used. When animals come near to the motion detecting sensor and it detects the animal movement. After getting that initial input signal, it is passed for further processing. Then it will be given to the microcontroller. Our system will be activated, Immediately buzzer will be on, at the same time it sends an SMS and makes call to the owner. Microcontroller Block is used for reading the inputs from GSM and Motion Detecting Sensor sensor. Whole process is controlled by microcontroller. The GSM module is used for sending SMS and making call to farmer when movement or smoke is detected. It also turns ON the motor, when smoke is detected. It alerts the farmer that some animals try to enter into the farm. Our LCD data will be display for SMS sending.

1.2 EXISTING METHOD:

This project describes a security alarm system that can monitor an industry and home. This is a simple and useful security system and easy to install. This motion detector is realized using readily available, low cost components. One of its many ap- plications is in a rolling shutter guard for offices, lands and shops. The detector will sense motion caused by activities like animals and switch on the connected load (bulb, piezo buzzer, etc) to alert you.

2. MOTIVATION AND OBJECTIVE

Before the beginning of every farm season, most farmers prefer to plan potential yields. On the other hand, some farmers chose to skip planning. Whether a farmer plans the potential yield or not, certain expectations are still present. While hoping for the best, farmers are often presented with various challenges and obstacles that require them to constantly question their productivity and resulting final success. The greatest importance is usually given to crop protection from diseases, insect pests, and weeds, as well as to protection from unfavorable weather events such as frost or hail along with other crop maintenance practices. The afore mentioned challenges are well-known and often discussed. However, farmers also face another interesting challenge, often forgotten about or not realized. Wild animals are a special challenge for farmers throughout the world. Animals such as deer, wild boars, rabbits, moles, elephants, monkeys, and many others may cause serious damage to crops. They can damage the plants by feeding on plant parts or simply by running over the field and trampling over the crops. Therefore, wild animals may easily cause significant yield losses and provoke additional financial problems. Another aspect to consider is that wild animal crop protection requires a particularly cautious approach. In

ARCHIVES

A Review on Recent Trends and Development in Speech Recognition System

A. Joshuva, S. Priyadharsini, S. Aravinth, P. Jayaraman, K. Balachandar and D. Meganathan

Abstract

Speech recognition is the method used to analyse the verbal content of an audio signal and its converted into a machine-understandable format, which is similar to understanding the speech by the system. Speech recognition is an interesting topic in research. There are a lot of research carried out in this field where speech is recognized and translated into text. The accuracy of speech recognition systems remains challenging task in the research field. Voice-controlled interfaces can now be found in the environment such as mobile phones, televisions, and even cars. There is different programming accessible that enable clients to direct to their PC and have their words changed over to content in a word design. This is the procedure though the discourse waveform caught by a mouthpiece is naturally changed over into a succession of words. This review depends on a thought of making a nitty gritty report on computerized discourse acknowledgment and the systems utilized behind this technique.

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OPTIMIZATION OF A UNMANNED AERIAL VEHICLE FOR THE LAST MILE DELIVERY

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Abstract - *Unmanned aerial vehicle have recently become a promising solution for rapid parcel delivery due to advances in battery technology and navigation systems. Drones have inherited limitations in battery capacity and payload, which make their efficient operation and management a critical problem for a successful delivery system. With advancing drone technologies and increasing commercial usage, we believe the last mile shipping industry is ripe for disruption by delivery drones. Drones can significantly accelerate delivery times and reduce the human cost associated with the delivery. This paper examines the value chain and opportunities in the delivery drones' market. It also discusses the barriers for adoption. It concludes with our case for drones to handle the last mile of delivery of most lightweight packages.*

Key Words: **Rapid parcel service, Navigation systems, Commercial usage, Accelerate delivery time, Reduced human cost**

1. INTRODUCTION

The internet evolution continues. Whether it is online shopping, ordering food, buying gifts, grocery runs, shipping official or personal packages the consumer space is increasingly relying on fast and reliable door step delivery. The market for delivering goods is massive. Shipping, Logistics, Online shopping businesses are investing heavily in the entire supply chain up to the last mile delivery to make it fast and efficient. Which leads us to believe drones will handle the delivery of most lightweight packages. While 'Drones' have been predominantly used by the military until quite recently, they arrived meanwhile in the civilian domain and in everyday life. Hundreds of thousands of toy drones or quadcopters are around worldwide and we all got used to breath-taking shoots from so far unimagined perspectives. Increasingly we encounter surveillance drones, many of us have already watched a video clip of a "drones' ballet dance" or observed how a tourist films herself with a "flying selfie stick". In many other areas pilot tests are carried out to test the usefulness of drones, for in- stance in agriculture, in the humanitarian and medial sector, for inspection of facilities, in the field of mapping and surveying, and last but not least in research, just to mention a few examples. Furthermore, the large online retailers, a few post enterprises and numerous start-ups worldwide lead us finally to imagine a world, in which everyday commodities will be delivered by drones through the air.

1.1 PROBLEM STATEMENT

These days we are pretty habituated of home- delivery system through e-commerce platform, however there is a big dependency on delivery boys and vehicles for timely delivery of the items. We could potentially use Drones for last mile delivery of items. While current prevalent addressing mechanism such as flat/long and post code are good enough for humans, these won't work for drone delivery as all houses in a multi-storey building will have same flat/long or post-code. Design a solution which can help drones to identify each address / flat as a separate unit and deliver the item accordingly.

2. OBJECTIVE OF THE PROJECT

The purpose of a delivery drone is to provide services for delivering objects or commodities rapidly and in out-of-the-way locations. These unmanned aerial vehicles can be programmed to deliver specific items from their warehouse to a designated area – the address of the individual who ordered the product.

When delivery drones are working to provide services for an organization, then consumers and the employees involved in the process both benefit from the increased efficiency. It allows people to focus on other essential items of the purchasing process. With accurate locating programs, this service offers the potential of a lower error margin assuming that the addresses submitted through a shopping cart are accurate. Consumers receive their goods faster and that leads to higher levels of productivity. The emissions that a delivery drone is responsible for are far fewer than standard packages using traditional delivery mechanisms. There would no longer be a need for airplanes to transport some goods, delivery trucks to offer home delivery, and other fossil fuel costs because warehouses would be conveniently located in most urban areas. That reduces the price of shipping and handling because there are fewer logistics to complete. Although this process could reduce some job opportunities, there would be an increase in positions related to drone programming and maintenance.

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Analysis of Rejection in Manufacture of Bosch Dimension Nozzle for Indirect Injector and its Remedy

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Abstract: *Using the Quality tools, we expose the area of problem and give an appropriate solution and suggestions to reduce the rejection. In a manufacturing process defects arise due to single or multiple causes. The defects are analysed systematically based on the received data to find the source of error and to derive a suitable contingency plan to eliminate the error. Here in the manufacturing of injector nozzles for diesel engines there is a loss in the tool used. Electro Chemical machining process is equipped for nozzle tip machining. This rejection analysis and quality study has been carried out and successfully implemented at "Delphi-TVS Technologies Ltd." The previous tool material was Nylon material. Later after identifying the loss alternate Delrin material has been installed for the tool which resulted in decreased loss rate. Moreover, the concept of quality is managerial philosophy that mainly aims at satisfaction of the customer and improving the organizational performance. The defect analysis is based entirely on the totality of the quality in all facets of an organization with the objective of reducing the waste and rework thereby reducing cost as well as increasing the efficiency in production. The main aim is to improve the product quality and its process in the industry.*

Key Words: *Quality, Quality Control, Pareto Analysis, Defect Rejection, Injector Nozzle.*

1. INTRODUCTION:

The project is aimed to ensure the successful Implementation of quality control tools and Techniques in manufacturing industry. In today's world, business has become more and more competitive. All industries and organizations have to perform well in order to survive and be profitable. Quality is the standard of products that meet customer expectations and ensures customer satisfaction. The repeated damage in tool the existing tool used is identified. The tool life, material used, properties and purpose is studied and a noted. After knowing the complete process about ECM (electro chemical machining) the Nylon tool is observed for its quality. Later with suggestions and idea from the quality team, we came with the idea to change the type of material used in the tool. Instead of Nylon, a material called 'Delrin' which has a balanced properties of both metals and plastics. This polymer designed to replace metal that has low friction and advanced properties. This material is widely used in automotive and electronics for its high mechanical strength and rigidity.

2. OBJECTIVE OF THE PROJECT

- To determine a cost effective method for machining nozzle by using seven quality tools.
- To study about Electro chemical machining and suggest a effective tool.
- To reduce the rejection rate in tools due to machining.
- To control the scrap of BDN (Bosch Dimension Nozzle) outer diameter unwash.

3. SPECIFICATION OF PRODUCT :

Finishing	-	Polish
Use	-	For TATA vehicles
Product Type	-	Fuel injector
Material	-	Steel
Part Type	-	Rotary pump part
Weight	-	50-150 Grams(g)

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CYCLE TIME REDUCTION IN CNC 2D LASER CUTTING MACHINE

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Abstract: *This report presents a cycle time reduction in CNC 2D laser cutting machine. Laser cutting is a technology that uses a laser to slice materials. While typically used for industrial manufacturing applications, it is also starting to be used CAD (top) and stainless steel laser-cut part (bottom) by schools, small businesses, and hobbyists. Laser cutting works by directing the output of a high-power laser most commonly through optics. The laser optics and CNC (computer numerical control) are used to direct the material or the laser beam generated. A commercial laser for cutting materials involved a motion control system to follow a CNC or G-code of the pattern to be cut onto the material. The focused laser beam is directed at the material, which then either melts, burns, vaporizes away, or is blown away by a jet of gas, leaving an edge with a high quality surface finish. Industrial laser cutters are used to cut flat-sheet material as well as structural and piping materials. The closed-loop feed drive dynamics does not have much influence on the cycle time, since the tracking delay is insignificant in position control servos. The proposed algorithm is validated in experiments and an experimental result has shown that the cycle time prediction error remains within 5% for various 2-axis, 3-axis and 5-axis tool paths.*

Key Words: *Feed rate, Depth of cut, Cutting speed, Spindle speed.*

1. INTRODUCTION:

In this challenge world, industries around the world constantly strive for lower cost solutions with reduced lead time and better surface quality in order to maintain their competitiveness. Automated and flexible manufacturing systems are employed for that purpose along with computerized numerical control (CNC) machines that are capable of achieving high accuracy and very low processing time. in the CNC machining, determining optimal cutting conditions or parameters under the given machining situation is difficult in practice. Conventional way for selecting these conditions such as cutting speed, feed rate, and depth of cut has been based upon data from machining handbooks and/or on the experience and knowledge on the part of programmer. As a result, the metal removal rate is low because of the use of such pre-defined machining parameters turning is the first most common method for cutting and especially for the finishing machined parts. In a turning operation, it is important task to select cutting parameters for achieving high cutting performance. Cutting parameters reflect the surface roughness (r_a,r_z),roundness(ø),material removal rate (mrr) and the dimensional deviations of the product. surface finish obtained in manufacturing processes mainly depends on the combination of two aspects: the ideal surface finish that can be produced from the manufacturing process and the actual surface finish which is generated taking into account irregularities and deficiencies that may appear in the process and changing manufacturing methods.

1.1 OBJECTIVE OF THE PROJECT:

- TO INCREASE THE FEED RATE
- TO INCRESE THE PRODUCTION RATE
- TO MINIMIZE THE CYCLE TIME
- HIGHER MATERIAL REMOVAL RATE

2. LASER TECHNOLOGY:

Lasers are light sources. The concept is very versatile; they can emit visible, infrared or ultraviolet spectra; they can generate long as well as very short pulses (pulsed lasers), or very powerful steady beams (continuous-wave, or CW, lasers), which are focused using simple elements such as lenses or concave mirrors in small micrometer-size spots, or to propagate nearly parallel beams extending for several kilometres (collimated beams). They differ from a fire, the sun or an ordinary light-bulb in terms of the intrinsic light generating mechanism which radiates as a continuous repetition of spontaneous and disordered processes, producing generally uniform illumination around them. The generation of the light from lasers is by amplification of a well-ordered and single-frequency seed, which produces a very directed emission, which is single-coloured and coherent across the beam. The amplification occurs within a resonator, usually consisting of a pair of aligned mirrors, with parallel surfaces, in which the seed grows

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INTEGRATION OF VEHICLE MOVEMENT WITH TRAFFIC CONTROL SYSTEM

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Abstract: *One of the frequent and unsolved problem today is that people are not stopping in the traffic when red light is shown in the signal. People are not following the rules and regulations implemented by the government. People are crossing the line and not stopping within the line marked on the road. Even though people are knowing that the red signal is going to come, they are speeding the vehicle in order to avoid the delay in the traffic which may result in collision with the vehicles coming from the other direction which ultimately results in accident. This project gives the solution to this problem by imparting a receiver (sensor) within the vehicle which works in tandem with the transmitter fixed with the signal system. When the driver is approaching the stopping lane on the road and when the signal is red, the sensor receives the input and the power going to the spark plug is cut so that the engine is switched off.*

Key Words: *Transmitter, Ignition system, Receiver, Engine, Signal*

1. INTRODUCTION:

A traffic control system is a control system which consists of a transmitter fixed with the signal and a receiver which is fixed on the bike. In a traffic, when the red signal has fallen, the vehicles must halt and wait for the green signal to get moving. This control system transmits a signal when the signal is red, to the nearby vehicle housing the receiver. The vehicle which crosses the stopping line on the road will come within the range of the receiver so that it receives the signal from the transmitter. Once the signal is received, the control circuit of the receiver cuts the power going to the spark plug. Once the power going to the spark plug is cut, the engine is switched off. Thus vehicles which cross the stopping line will get their engine switched off by this traffic control system.

2. MATERIALS:

S.No	Material	Quantity
1.	Iron pipe	1 (8ft)
2.	Base plate	1
3.	LED (Red, Amber, Green)	6 bulbs each color
4.	Transmitter	1
5.	Receiver	1
6.	Wire	5 m
7.	Switches	4 nos

Table 1.1

3. METHOD:

The transmitter gets energized once the traffic signal is red and it transmits signal to the receiver. The receiver is mounted on the bike. When the bike crosses the stopping line on the road, it comes under the range of the transmitter. The receiver will receive the transmitted signal and the gives the input to the control circuit. The ignition circuit gets opened and hence there is no current flow in the circuit and thus the engine is switched off. To crank the engine once again, the signal must turn green so that it receives the signal from the transmitter so that the circuit is

Design and Fabrication of Mono Leaf Spring with Natural Composite Material

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Abstract: Now days the foremost important problem among the automobiles are fuel efficiency and emission gas regulation. The load of car is very important then the fuel efficiency of the car. So By decreasing the rear load of automobiles is healthier than that of sky rocketing the fuel efficiency. The aim of this project work is optimization of weight by employing of the mono spring within the automotive vehicles. In line with the ASTM standards, style, analyze, fabricate and testing of mono composite spring is that the main goals of the project. The rear load of the machine element is feasible to scale by the material, with no reduction within the load carrying capacity. FRP spring even have excellent fatigue resistance and sturdiness. During this project work, the composite spring is made by the vacuum resign infusion composite fabrication Process. The specimen is tested for the static load carrying capacity on universal testing machine. Here, the steel spring has higher stresses compared to the fiber reinforced composite spring. The fiber reinforced composite spring is a smaller amount than the steel spring. Hence the fuel saving is obtained. This make countries energy independent, hence the fuel is saved and fuel is produced. The optimization of the spring geometry is that the most given consideration. the most target of the project was to induce the mono spring with minimum load, therefore the spring is must capable of carrying the given static external forces or load without failure. Stresses and displacement were look constrains. The specimen is tested for the static load carrying capacity on universal testing machine.

Keywords: **Natural fiber, Composites, Leaf springs, Design constrains, Analysis, CATIA, Resin, Vacuum resin infusion.**

I. INTRODUCTION

In the present, to optimize the use of energy .the all automobiles manufacturers are mainly focuses on the load reduction. The introduction of higher material will achieve the weight reduction .leaf springs are mainly used in suspension system to soak up the shock loads in various automobiles like light cars, trucks heavy duty vehicles and in rail system. If the composite material is employed for suspension spring instead of conventional spring, it will reduce the weight of the conventional spring by nearly 70 and 80%. Spring initially called as laminated or carriage spring. Spring would be a simple kind of spring .spring commonly used in the wheel vehicles for the suspension. This is one of the oldest types of springing, in the ancient times. The top of the spring is also guide along the precise path is one of best advantage of spring over helical spring. In automobiles the most common were leaf spring. In the right up to the 1970's in European countries and late 1970's in America ,when they move to front wheel drive .They mostly use coil spring instead of leaf Spring. In this present ,in heavy commercial vehicles ,such as cars ,heavy cars, trucks and vans and SUV and railway carriages is made up of leaf spring.(1) In the line with the Ravi Kumar . V, Lalitha Nayarana .R, the rear load of the machine is possible to scale by the composite materials with no reduction in the load carrying capacity. (2) In the line with kalyani Sudhir Kulkarni to attain the necessity of natural resources conversation, the automobiles and manufactures are mainly focuses on the load reduction. (3) In the line with M.Manikandan to optimize the use of energy ,the automobile manufacturers are mainly focuses on the load reduction.(4) In the line with the Krushankant R Jani ,Nirav kamdar is to provide a damping action ,it is not well controlled and it will ends in the section with the motion of the suspension of the automobiles.(5) In line with Jagbhooshan Patel , Veerendra Kumar to attain the load carrying capacity, stiffness , deflection and weight saving of composite spring .(6) In line with the Syambabu Nutalapati to optimize the use of energy ,the all automobiles manufacturers are mainly focuses on the load reduction. (7) in line with the Mujawar Ajij I, S.D.Katekar ,in the left spring ,to back load to be scaled , with no reduction in the load carrying capacity and stiffness.(8) in line with the Kiran K.Jadhao Dr.Rajendra S.Dalu to introduction of higher material ,design optimization and better manufacturing process will achieve the height reduction. (9) In line with the M.Sureshkumar, Dr.P.Tamilselvam, G.Tharanitharan the automobiles manufacturers are mainly focuses on the load reduction. (10) In line with the K.Rajesh, S.Vamshi Krishna and Ch.Sushanth to scale back the price and weight of spring.

II. MATERIAL AND EXPERIMENT

2.1 MATERIAL:

2.1.1 VACUUM BAGGING:

The composite to be consolidated is placed on a single-sided mould. The fabric is then covered with an impervious film, which is sealed round the fringe of the part. By evacuating the air between the mould and therefore the dust bag employing a pump, the part is consolidated under gas pressure.The process is commonly performed in an oven to help with the curing of the resin. Because the dust bag material may be readily move size, it's a really flexible process in terms of the scale of the parts that may be consolidated.

In the open mould the material to be combined is placed. It's then covered with a peel ply and a breather fabric. This entire lay-up is then covered with a dust bag and sealed round the edges, except the connection to the air pump. Activating the pump sucks all the air out of the space between the bag and also the mould, causing the composite to be consolidated under 1 bar of pressure. Thiscan often be worn out an oven to help with the curing of the resin. Once the part is fully cured, the pump is disconnected, the bag, breather fabric and peel and take away discarded and also the part off from the mould.

ARCHIVES

Cost Analysis of GR91 Hydroand Non-Hydro Boiler Header

A. Joshuva, J. Pravin Kumar, S. Aravinth, N. Ramasamy, N. Ramasamy and M. Chandrakala

Abstract

In boiler, header is one of the important part where it collects the water or steam or mixtures of both are collected at one end and distributes to other end. GR91 material is a very heat sensitive and also difficult to manufacturing of header. In our study using GR91 material for the manufacturing of header followed by the sequence of operation. After manufacturing the header, it is subjected to hydro testing. This study is to analyse the cycle time and cost involved in manufacturing of header with and without hydro test. Due to the hydro test, the cycle time and cost involved also increased drastically. In this analysis to show the increased time and cost. It also helps in maintaining the quality of work pieces and maintaining its accuracy. Main objective of our studyis to predict the cost analysis of the header and to reduce the number of rejected pieces from the site.

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In Press, Journal Pre-proof

Review

A review of conventional and renewable biodiesel production

P. Vignesh [a], A.R. Pradeep Kumar [b], N. Shankar Ganesh [c], V. Jayaseelan [d], K. Sudhakar [e, f]

https://doi.org/10.1016/j.cjche.2020.10.025

Abstract

The need for sustainable fuels has resulted in the production of renewables from a wide range of sources, in particular organic fats and oils. The use of biofuel is becoming more widespread as a result of environmental and economic considerations. Several efforts have been made to substitute fossil fuels with green fuels. Ester molecules extracted from processed animal fats and organic plant materials are considered alternatives for the use in modern engine technologies. Two different methods have been adopted for converting esters in vegetable oils/animal fats into compounds consistent with petroleum products, namely the transesterification and the hydro-processing of ester bonds for the production of biodiesel. This review paper primarily focuses on conventional and renewable biodiesel feedstocks, the catalyst used and reaction kinetics of the production process.

Keywords

Biofuel; FAME; Renewable diesel; Kinetics; Catalyst; Transesterificat

Journal of Materials Research and Technology
Volume 9, Issue 6, November–December 2020, Pages 14029-14035

Original Article

Acoustic and mechanical characterisation of polypropylene composites reinforced by natural fibres for automotive applications

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https://doi.org/10.1016/j.jmrt.2020.09.112

Abstract

In recent days, polymer composites reinforced with natural fiber had shown greater focus and interest in the production of environmentally sustainable materials and in part in the replacement of synthetic fibers commonly used in automotive applications. In this study, an attempt has been made to investigate the effect of natural fibers obtained for composite preparation from milkweed, kusha grass, sisal, banana and hay mixed with polypropylene 10:90 (wt %). Mechanical properties such as tensile strength and hardness have been determined in accordance with ASTM standards. Water absorption studies have also been done to investigate the water's absorption ability. The acoustic characterization of these natural reinforced fiber composites is measured by a thickness of 10 mm and 20 mm. The result has shown that an increase in thickness is not effective at higher acoustic absorption frequencies. Scanning electron microscope analyzes microstructures of milkweed fiber. These results identify suitable materials for different mechanical and automotive applications.

International Journal of Innovative Technology and Exploring Engineering (IJITEE)
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Metaclassifiers for Predicting the Robotic Navigational Performance

S.Padmapriya, J.S. Richard Jimreeves, P.Kalaiselvi, A.Nageswaran, S.Arun

Prediction of robot steps can be used in path exploring problems and application of data mining techniques, enhances navigational direction of robots. In this paper the proposed method is validated on the data sets using multi classification algorithms with four types of movement classes like Action-ahead, Sharp right turn, small in degree-right turn, and small in degree left turn in a separate layer. We obtain the results based on Meta classifiers' accuracies tabulated. A layered approach is followed for obtaining the more accurate multi-classification.

Keywords: Data Mining, Classifiers, Multiclass, Layered approach, Multi-Classificat

I. INTRODUCTION

This process discovers novel correction pattern and recent trends by shifting through the huge amount of data loaded in storehouse, Using this technique for statistical and analysis for pattern recognition. Process is deal with diagnosis of invisible knowledge through data mining unforeseen patterns and different rules from huge database.

Classifications are one of the most popular Data mining techniques. Classification predicts categorical discrete unordered labels. In the data mining we have a various types of classification techniques which are used such as Decision tree, Fuzzy logic, Meta-Classifier and so on.

The subject exposed in popularized briefly as given below, in part section 2, workout the problem. In part section 3, Analysis and results in experimental output, finally we conclude in part section 4.

II. ESTIMATING CLASSIFIER EFFICIENCY

Supposing classifier efficiency is the most important to allow data to check the efficiency for a given classifier which will mark the future data. The main usage classifier which wraps to provide additional data preprocessing for feature selection accuracy. Some of the techniques for estimating classifiers are k_fold cross Validation methods and bootstrapping. In this paper, Meta Classification methods are implemented. Meta Classification algorithms are Bagging, Dagging, Decorate, AdaBoostM1, and Multi Scheme etc...

III. PROPOSED LAYERED MODEL

The main components of our model are classified into two stages, the first stage is to classify the dataset one of two or move forward, the second stage contains three different sequential layers which are able to identify three classes.

The dataset categorized into two sets one as 'Turn' another as 'Move Forward', then we implements the layered approach model.

It consists of three different sequential layers such as Layer(1), Layer(2) and Layer (3) which can identify three classes Whether sharp- right turn, small in degree- right turn, small in degree left turn. To improve high efficiency in second stage, this proposed model is bagging, decorate, multiclass classifier, multi-boost AB.

Classification technique is one of the prominent to data mining process. Classification predicts categorical discrete unordered labels. In the data mining we have a various types of classification techniques which are used such as Decision tree, Fuzzy logic, Meta Classifier and so on.

IV. RESULT

In given below the description of dataset is obtained from the UCI repository, all the data to consist of attributes collected the data from the sensor. SCITOS G5 is the navigation robot through the room follower wall in a clockwise direction, for four cycles, using of sensor ultrasound sensor arranged circularly around its waist.

4.1 Navigation set Description

The Robot Navigation datasets are collected from UCI repository. It navigates or directs the following clockwise direction. It has 4 divisions; using 24 sensors are arranged in circular format. It is in the form of .arff file format. This dataset contains three different files. Each contains a particular or unique reading which is used to evaluate to the work of classifiers with proper input In this we consider the first dataset as it contains more than 5000 attributes and instances.

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Enhanced Cyber Security for Big Data Challenges

S.Padmapriya,N.Partheeban,N.Kamal,A.Suresh,S.Arun

Abstract: In recent years mining of data from social media is attracting more attention due to the explosion in the growth of Big Data. In security, Big Data deals with collection of huge digital information for analyzing, visualizing and to draw the insights for the prediction & prevention of cyber attacks. The Big Data mined about an enterprise from the data cloud, if properly analyzed reveals the private information which is highly risky. Maintaining the privacy of users of social media is the major challenge with respect to the security issues. As the data is generally stored in a data cloud, a boundary of trust must be established between the social media users and the data bank owners. Hence there is requirement of developing an efficient protocol for sharing of data. To secure the sensitive information of the user, data mining can be used along with an effective algorithm. This paper proposes the technique of code inline parsing to make the data more secure from the attacks & cyber hacks along with the SQL injections such that the data on the social media is secured. The proposed method secures the platform of Big Data which protects the user's sensitive information.

Keywords: Big Data , Privacy, Information Security, Social Media

I. INTRODUCTION

In the current era, information technology has attained rapid progress in industries and enterprises which made the term Big Data very popular. The expansion in data growth is very rapid as the data is generated from a variety of sources such as social media, pictures in digital format, digital videos, business record, etc. Management of this large amount of data known as Big Data is a challenging task. This data can gain revenue to the enterprises as proper analysis of this Big Data leads to proper understanding of the customer requirements to take decision on the strategic basis. On the other hand, hacking of the big data leads to serious threat as there is possibility of insertion of malicious software in the operating systems and the apps. Hence to secure the big data from the cyber threats enhanced method is proposed and implemented in this paper.

II. BIG DATA'S GROWTH

Day by day there is rapid increase in the amount of data generation as the number of users using social media such as whatsapp, facebook, twitter etc. are increasing rapidly. According to the analysis of IBM, 95% of the data of the world id generated in the last few years and still generation of data is continued at a rate of 2.5 quintillions of bytes data every data [2].

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The great problem of big data is with its storage. Database of large sizes are required for storing big data and literally not possible to manage these huge database with the commonly used database management system.As the datasets ranges between terabytes & exabytes, securing its privacy and protection is its greatest challenge. Storage and analysis of big data provides a sense of reliability for the enterprises. This paper proposes enhanced method for securing big data.

III. SECURITY THREATS MEASURES

Securing the privacy of user's information is the major challenge in the point of view of security for the big data, such as attackers & hackers trying to access the information stored in the database about the user. There is breaching in the security of information due to the various security issues. A set of codes called as SQL injection are passed by the attackers & hackers to break the access of database. Default codes are used by the attackers through which the security of the database is broken. Around the globe, there is requirement for data as most of the companies face shortage of such skills. Hence to fill the gap in the skills of the workers companies avail online training for all the workers in order to meet the requirement. Therefore the security is breached by the various ways. The major aspects for maintaining the confidentiality are the user identification & authentication which indicates the right of accessing the information. The threats commonly encountered by the confidentiality of information are virus attacks, unauthenticated user activity, hackers, downloading of infected files.

IV. SECURITY OF BIG DATA

Many businesses use big data as it has broad prospect across the globe, in the field of marketing and technical research without looking for the prospect of security as generally there will not be any major concern with the new techniques for security. The big data breaches is huge as shown in Fig.1 similar to that of the technology with serious damage of reputation compared to present situation. Business can gain improved insight of capacity of customer by properly storing and analyzing the big data as these peta bytes of data includes content from the social media, weblogs and stream data. Reasonably classification is facilitated by the ownership of the big data.

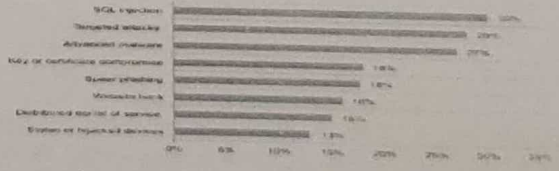

Fig 1.Breaching of Criminal or Malicious Software

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Design and Implementation of Autonomous Flower Harvester using Image Processing

A.VinothKumar, V.Kannarasu, S.Padmapriya, N.Partheeban, S.Arun

Abstract *In this paper to design and implementation of fully autonomous system which can harvest flowers. The flowers will be able to cut from the plant by using the device proposed in this paper in a perfect condition which will take lesser time for harvesting as compared to the manual harvesting by humans. In recent days, automated flower harvesting is available only for large flowers like tulip. Thus there will be a requirement for harvesting smaller flowers like rose. This procedure will solve this problem and also it is cost efficient then manual harvesting. In this procedure the watershed algorithm is used to detect the flowers. By the histogram distance calculation, the detected flower is compared to the flowers which are already present in the database. If the detected flower matches 70-80%, then there will be the calculation of centroid of the flower and the distance from the centroid at which the stem is to be cut. The robotic arm is provided that will cut the matched flower when the signal has received to it via microcontroller. The project has to establish a cost effective harvesting systems for agricultural purpose.*

I. INTRODUCTION

Image processing is a technique to analysing and manipulating the image, in charge to get the required in sequence of the picture or to enhance it. In the image processing input is given as a picture and the simulation output might be a picture or some specified characteristics or feature of that image. It is narrowly connected to the vision and graphics of the computer in which forms main research area in computer graphics, engineering, etc.

The most common is digital image processing, but there is a possibility of analog and optical image processing. In the hard copies like photographs the analog technologies are used. Digital image is nothing but the spatial co-ordinates (say x,y) are having discrete values. Digital images are cost effective and faster to process. Image processing is a vast area in which the various interpretations are used. The image processing tool is an important role is association through visual techniques. Thus the image processing analysts apply the collateral data along with the personal knowledge for processing the image.

The systems that monitors are react or manage an outer environment which are connected through physical sensors, Interfaces between input and output, actuators that can have biological or physical objects of any structure and form is a real time embedded system. It should meet some timing and various constrains due to the real time application as it going to interface with external world.

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This autonomous system will allow the harvesting of smaller flowers with higher feasibility. This system consists of a sequence of elements for harvesting flowers at right time with collision avoidance. They are motors, sensors, collision avoidance along with the gripper and the robotic arm.

II. SYSTEM DESCRIPTION

In this procedure the water shed algorithm is implemented for detecting the flower. According to the algorithm the description is given below.

1. Replicate filtering:

The input array value external the limits of the array are supposed to he same nearest array limt values in the duplicate filter. The data types are handled as the image arithmetic functions by IM filter function. This IM filter is used to reduce the null padding artifacts in the picture around their edges. It offers the border replication which is nothing but the boundary padding method. To attain this, additional argument „replicate'' is used to IM filter.

13=imfilter(I,h, „replicate'');

figure; imshow(13), title(„filtered with border replication'')

III. CALCULATION OF GRADIENT:

A directional change in the colour or strength of a picture is called as the image gradient. The image gradient is the essential structure building block used in the image processing.

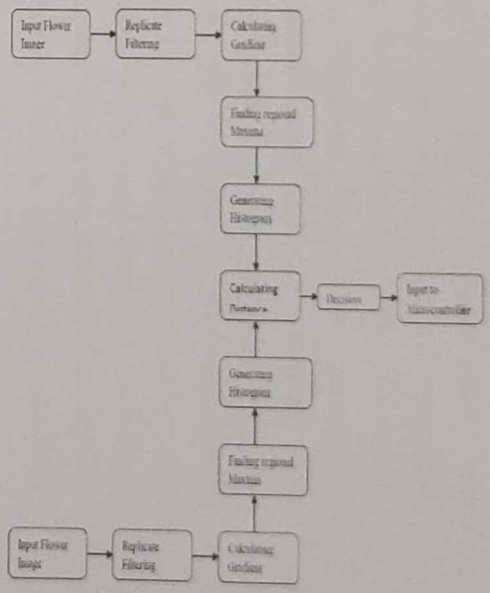

Fig.2.1: System description

Using this image gradient, vertical and horizontal edges are detected. Horizontal gradient is used to detect the vertical edges,and then the extreme values of the image gradient are used to find the threshold values. The calculation of horizontal gradient was given

Wireless Personal Communications

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Space Time Regularized Zero Forcing in Downlink Code Division Multiple Access Systems with Complementary Codes

Authors Authors and affiliations

D. Judson, Vidhyacharan Bhaskar, S. Arun

Article

First Online: 14 May 2019

Abstract

Complementary coded code-division multiple access (CC-CDMA) has been originated as one of the extremely robust multiuser access technique in designing high data rate systems with frequency diversity for futuristic wireless communication. The integration of multiple-input multiple-output (MIMO) systems with CC-CDMA offers space diversity gain in addition to the achievable frequency diversity in CC-CDMA systems. However, the performance of conventional chip level space–time receiver in MIMO CC-CDMA is deteriorated due to multiple access interference (MAI) and spatial interference under frequency selective fading channels. A zero-forcing receiver used for minimizing MAI provides unsatisfactory performance in interference limited environments due to amplification of noise and hence the use of regularized zero-forcing (RZF) receiver is proposed and investigated in this study to achieve a space–time interference cancellation (STIC) system. Simulation results are performed to reveal the significance of RZF-STIC in achieving performance gain than conventional equalization schemes, and at the same time enhancing frequency diversity and spatial diversity gain with less complexity at all system loads.

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Regular Article

THE EUROPEAN PHYSICAL JOURNAL SPECIAL TOPICS

Analysis and electronic implementation of an absolute memristor autonomous Van der Pol-Duffing circuit

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Abstract. In this paper, a memristor-based chaotic circuit is built by replacing the nonlinear resistor of a unified Van der Pol-Duffing circuit by an ideal and active flux-controlled memristor with an absolute value nonlinearity. The equilibrium points of the mathematical model describing the proposed absolute memristor Van der Pol-Duffing circuit are determined and their stabilities are analyzed thank to the Routh-Hurwitz criteria. The numerical simulations reveal that the proposed absolute memristor circuit exhibits reverse period-doubling to chaos, bistable one-scroll chaotic attractors, double-scroll chaotic attractor, bistable periodic attractors and antimonotonicity phenomenon. Moreover the proposed absolute memristor circuit is implemented in PSIM software package. The results found using the PSIM software package have a good qualitative agreement with those found during the numerical simulations.

1 Introduction

Considerable efforts have been devoted in the literature to study chaotic circuits [1–3], due to their potential applications in secure communication, chemical and biological systems, information sciences, biotic sciences and so on [4–7]. The pioneer and well known Chua's circuit which generates chaotic signals consist of five elements connected in parallel: two capacitors, an inductor, a resistor and an active nonlinear resistor whose voltage-current characteristic is represented in terms of a piecewise linear function with three segments [8]. Then other authors introduced interesting chaotic circuits such as modified van der Pol circuit [9], Van der Pol-Duffing circuit [10]. It is remarkable that the Van der Pol-Duffing circuit continues to attract

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Digital Image Falsification Detection System for Effective Data Communication

T. Sasilatha, K.R. Anupriya, C. Gnana Kousalya, S. Arun

Abstract: *In this proposed system a digital imagefalsification can be identified using the combination of both adaptive over block based segmentation, feature keypointbased feature extraction algorithms(Scale Invariant Feature Transform (SIFT) and Speeded Up Robust Features (SURF)) and forgery region extraction algorithm. The proposed falsification detection algorithm comprises both block based falsification detection algorithm (adaptive over block based segmentation and block feature matching algorithm) and the keypoint based falsification detection algorithm(forgery region extraction algorithm). Adaptive over block based Segmentation algorithm adaptively segments the input digital image into separate(non overlapped) blocks in irregular manner. Scale Invariant Feature Transform (SIFT) algorithm and Speeded Up Robust Features (SURF) algorithms are used to draw out features from the segmentedblocks as a block features. Then the extracted features are matched with the feature points of other segmented block. If the feature key points are matched with any other feature point presents in the segmented blocks, then the matched feature points are marked as Labeled key Points (LKP), which can be doubted as a forged regions. Finally, the Forgery Region Extraction algorithm can be used to detect the forged region from the input digital image based on the extracted labeled feature points. The experimental outcomesdisplay that the novelfalsification detection system can accomplished the requirements compared with the existing digital imagefalsification detection methods.*

Keywords: *Falsification, Forgery, SIFT, SURF, Feature key points, Segmentation, Morphological*

I. INTRODUCTION

Imitations are not new to humanity, but an exceptionally old problem. It was limited to craftsmanship in the past, and yet writing did not affect the populace as a whole. A picture can be easily controlled and modified due to the advancement of automated image handling software and neutering tools thesedays.

To know outwardly whether the image is real or disorted is incredibly problematic for people.Throughout mainstream media and on the Internet, there is a rapid increase throughout digitally controlled falsifications. This trend shows real flaws and reduces digital image quality.In this way, it is essential to set up procedures to verify the authenticity and truth of advanced photographs, especiallygiven that the images are presented as evidence in a court of law, as news items, as part of remedial documents, or as money-related articles.

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In this context, the identification of photo falsification is one of the basic aims of the forensic camera.

For copying and moving forgery operation, image processing techniques such as blurring, compression, scaling and adding noise can be used. Methods of falsification detection can be classified into two classification based on existing techniques: block-based algorithms (segmentation and segmented blocks matching algorithms)[2-12] and keypoint-based algorithms (falsification zone extraction algorithms).

In the existing block-based falsification detection algorithms, the input digital images are segmented in the form of overlapped image blocks in regular manner; then, the forged region is obtained by matching image pixel blocks or rework coefficients. A.J.Fridrich et al.[2] proposed a forgery detection method based on the block based falsification algorithm. In this the image was segmented in the form of overlapped rectangular blocks. The forged regions detected by matching the Discrete Cosine Transform coefficients of the rectangular blocks. H. Farid and A. C. Popescu et al [1] proposed Principal component Analysis (PCA) to measure the feature dimensions. W. Luo, J. Huang et al.[3] used the RGB color components and direction data as block features. G. Li, Q. Wu, D. Tu,et al.[4] proposed a system, which Combines both Discrete wavelet transform (DWT) algorithm and Singular price Decomposition (SVD) algorithm to extract the image features. B. Mahdian and S. Saic [5] proposed a algorithm, which extracted the twenty four Blurinvariant keypoints as features. X. Kang and S. Wei [7] pro[oseda algorithm which calculate the singular values of a reduced-rank approximation in every block. S. Bayram, H. T. Sencar, N. Memon et al.[6] proposed a algorithm, which uses the Fourier-Mellin transform (FMT) to extract key point features options.

The alternative method for the block based falsification detection algorithm is feature point-based falsification detection methods. In this feature point based falsification detection system key feature points are extracted and matched with the whole part of image to maintain a few image conversions while detecting the falsified regions. In [15-18], to extract the key feature points the Scale-Invariant Feature Transform algorithm[19] was used to extract the feature keypoints and then the extracted features can be matched with one another to identify the forged regions. In this SIFT algorithm, if the value of shift vector increases above the threshold value, then that group of keypoints are marked as tambered region.

The another type of feature extraction algorithm is Speeded Up Robust Features (SURF) [21], which can be used to extract the key feature points and locate the falsified regions.

AN EFFICIENT ALGORITHM FOR A CACHE COMPRESSION AND DECOMPRESSION TO IMPROVE SYSTEM MEMORY PERFORMANCE

Authors: K Janaki
P Vijayakumar

Domain: building electrification

Abstract: Speed is the challenging issue for any electronic component. Memory access time is dependent on speed of the microprocessor. Access time is more in the off-chip memory than on-chip memory. In order to increase the speed, cache memory compression technique is found by microprocessor system designers, as it increases the cache capacity and off-chip bandwidth. Performance of the processor, power consumption and area were assumed in previous work on cache compression. A lossless cache compression algorithm is proposed and designed for high performance processor. This technique allows Parallel compression of multiple words using dictionary mode. Compression ratio is not degraded in the performance

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AN EFFICIENT ALGORITHM FOR A CACHE COMPRESSION AND DECOMPRESSION TO IMPROVE SYSTEM MEMORY PERFORMANCE

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Abstract—*Speed is the challenging issue for any electronic component. Memory access time is dependent on speed of the microprocessor. Access time is more in the off-chip memory than on-chip memory. In order to increase the speed, cache memory compression technique is found by microprocessor system designers, as it increases the cache capacity and off-chip bandwidth. Performance of the processor, power consumption and area were assumed in previous work on cache compression. A lossless cache compression algorithm is proposed and designed for high performance processor. This technique allows Parallel compression of multiple words using dictionary mode. Compression ratio is not degraded in the performance.*

Key Terms: Cache memory Compression, data compression, Parallel compression of multiple words.

I. INTRODUCTION

Semiconductor technology rapidly develops and micro architectural developments continue to increase which results in performance gap between processors and memory. Moore's law states that for every two years processor technology doubles in performance and speed.

Modern processors use L1 and L2 as two levels in cache memories to reduce latency and bandwidth. [3]Cache memory compression has been proposed to improve system performance, since effective capacity can be increased by compressing data stored in on-chip caches which reduces cache misses.

When the processor technology increases, speed increases faster because on-chip cache memory hierarchies can store more data in megabyte size. Off-chip memory speed is considerably low compared to processor speed. When the multiprocessor is utilized by system design, it requires more access to memory. Cache compression is used to reduce off-chip communication speed with the processor[5].

The Challenges of Cache memory Compression are:

1. Compression and decompression should be very fast.
2. The hardware should occupy less area and should not increase power consumption.
3. The algorithm should compress even small blocks without losses and should maintain good compression ratio. Compression ratio refers to the ratio between the sizes of the compressed data over uncompressed data.
4. Effective System wide compression ratio must be considered.

Cache compression is one way to improve the effectiveness of cache memories. To reduce latency and bandwidth, cache memories have long been used.

II. RELATED WORK AND CONTRIBUTIONS

i) The **X-Match algorithm:**

This algorithm is mainly based on dictionary entries where in current data is matched with the dictionary entries. 4 byte wide words are entered in the dictionary and many types of matches are possible. The word which do not match with the dictionary are sent separately. X-Match procedure is referred by partial match concept.

The dictionary uses Move to Front (MTF) strategy. The move to front strategy is used to maintain linked list with no duplicate data. When new data is read, MTF is inserted in front of the list. When a duplicate data is read, this data is deleted and inserted again in the beginning.

Though X-Match algorithm is appropriate for compressing main memory, hardware has very large block size which is difficult for compressing the cache lines.

ii) **Frequent pattern Compression (FPC)**

FPC is used to compress cache line by storing frequently appearing word patterns[4]. Cache line is splitted into 32 bit word for compression. Each 32-bit word is encoded as a 3-bit prefix.

If the word matches with any of the patterns given in Table 1, then each word in the cache line is encoded into a compressed format. If the word does not match with any of these patterns, then it is stored in its original 32-bit format i.e. the whole word is stored with the prefix '111'. [11]Cache line compression takes place between L1 and L2 cache during data write in L2 from L1. Decompression takes place when the data is retrieved from L2 to L1.