

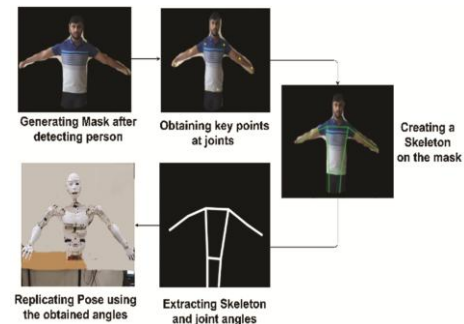
CONTENTS

Computer Science & Information Technology

563 VISU: A 3D Printed Functional Robot for Human Pose Replication

This paper presents VISU, a novel 3D printed functional robot. VISU is equipped with open-source technologies making it more modular in adapting Internet of Things (IoT) based services. VISU is able to detect and analyze the user's activity and pose. In addition, a simple method to replicate the pose of a user is also proposed. VISU can also perform actions such as Face recognition, Object Recognition among other basic functionalities.

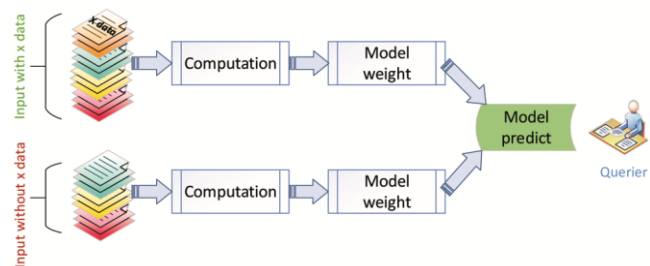
Pranav Kompally, Sibi Chakkaravarthy Sethuraman, Srikar Reddy, Charan Koduri, Yaswanth Naidu, M.Raghavaiah, Sashidhar Reddy & Namburi Nikhil



570 Knitting Machinery Spare Classification using Deep Learning with Differential Privacy

Given their widespread use, knitting machines must be maintained regularly. When the spare parts that make up these machines break down or become unusable, they must be replaced with new ones. However, the code/name information of the spare parts is not available to the end user, and can only be accessed with high-cost catalog procurement. Manufacturing companies keep the code/name information of such machine parts confidential. When the literature is examined, there are no studies in which spare parts are classified with machine learning-based algorithms. In line with this, this study focuses on the classification of spare parts using machine learning-based algorithms. The deep learning-based Convolutional Neural Network (CNN) architecture developed in this study can classify highly similar spare parts. In addition, since the code/name information received from the manufacturer and the spare part sample images require confidentiality, the CNN architecture has been developed in combination with the Differential Privacy (DP) method to present the DP-CNN method.

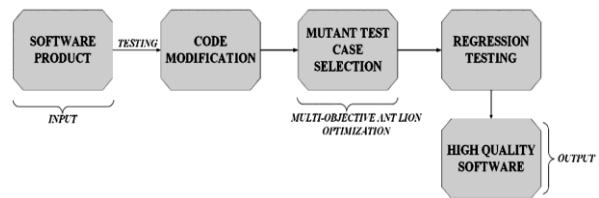
Canan Tastimur, Songul Kasap & Erhan Akin



582 Multi-Objective ANT Lion Optimization Algorithm Based Mutant Test Case Selection for Regression Testing

The regression testing is principally carried out on modified parts of the programs. The quality of programs is the only concern of regression testing in the case of produced software. Main challenges to select mutant test cases are related to the affected classes. In software regression testing, the identification of optimal mutant test case is another challenge. In this research work, an evolutionary approach multi objective ant-lion optimization (MOALO) is proposed to identify optimal mutant test cases. The selection of mutant test cases is processed as multi objective enhancement problem and these will solve through MOALO algorithm. Optimal identification of mutant test cases is carried out by using the above algorithm which also enhances the regression testing efficiency. The proposed MOALO methods are implemented and tested using the Mat Lab software platform. On considering the populace size of 100, at that point the fitness estimation of the proposed framework, NSGA, MPSO, and GA are 3, 2.4, 1, and 0.3 respectively. The benefits and efficiencies of proposed methods are compared with random testing and existing works utilizing NSGA-II, MPSO, genetic algorithms in considerations of test effort, mutation score, fitness value, and time of execution. It is found that the execution times of MOALO, NSGA, MPSO, and GA are 2.8, 5, 6.5, and 7.8 respectively.

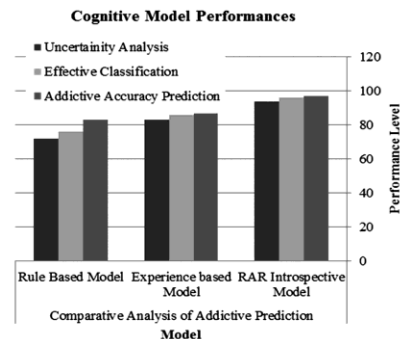
Aprna Tripathi, Shilpa Srivastava, Himani Mittal, Shivaji Sinha & Vikash Yadav



593 Classification of Addiction Behavior based on Regular and Rare Model

Realization is the comprehension of existence in its widest terms. Many of us, both physically and virtually, are unconscious of our level of addictive concern. Predicting virtual and emotional-based activity poses certain difficulties in determining an addiction level. Specifically, how to compute the addictive and what types of controls can help us monitor the addiction and get a good estimate of the individual's addicted stage. The threshold levels vary depending on a variety of factors such as age, gender, society, and so on. The addiction mentality system's prediction plays a vital role. In this regard, our research develops a Regular and Rare (RAR) based classification model for finding effective addiction predictors. This RAR classification and prediction technique is based on an examination of addiction patterns' consistency. This strategy focuses on the length of time spent doing the same activity rather than the amount of quantity consumed. The concept behind it if an individual consumes a low density of nicotine but persists for a decade, this is considered as a habitual and addictive activity. In such a way that if an individual doesn't really engage in the very same type of activity for an extended period of time, the action may be considered an uncommon occurrences rather than an addictive class.

V Sabapathi & J Selvin Paul Peter

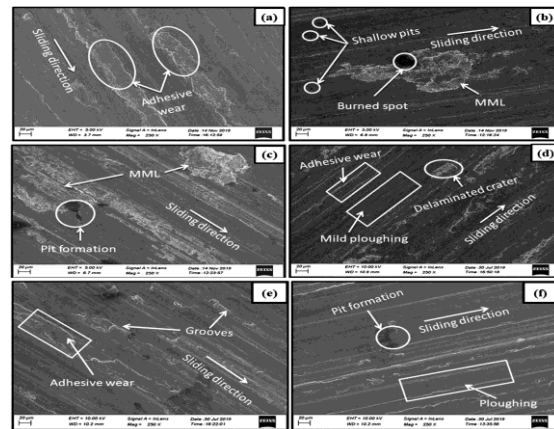


Mechanical Engineering

600 Impact of TiB₂ Content and Sliding Velocity on Wear Performance of Aluminium Matrix Composites

Particulates dispersed aluminium matrix composites are the major substitute for variety of application at present scenario due to its massive strength, ductile nature and great thermal conductivity. In this work, TiB₂ micro-sized particulates dispersed aluminium matrix composites prepared with different weight percentages of TiB₂ particles by using liquid state stir casting process. Present investigation influence the impact of TiB₂ particles content (0, 3, 6 and 9 wt.%) and variation of sliding velocity (0.5, 1, 1.5 and 2 m/s) for a constant load 20N and sliding distance 1000 m on the wear performance of composite rubbing against EN31 steel disc. Wear analysis revealed that TiB₂ content enhanced wear rate and reverse trend noticed in case of coefficient of friction. Similarly, wear rate deteriorated and enhanced COF as increasing sliding speed of counter plate rotation.

Abhijit Bhowmik, Dipankar Dey & Ajay Biswas


606 Effect of the Use of Biodiesel on the Materials of the Engine Components

Biodiesel is regarded as a viable substitute to diesel fuel owing to its green and biodegradable origin. Among the main advantages are reducing CO₂ demand and the absence of SO₂ emissions since it does not produce sulphur. This work aims to investigate the effect of biodiesel usage on the properties of specific engine components, such as polymeric sections, ceramic materials used as thermal barriers, and lubricating oil. Mechanical tests were performed on samples of various polymers used in parts of the fuel system of current diesel engines subjected to varying biodiesel interaction periods. Specifically, measures of fuel absorption in acrylonitrile "o" rings and hoses and their effect on final mechanical properties. The results show that more significant biodiesel cuts result in greater absorption and degradation of mechanical properties. The chemical analyses were performed on the engine oil at various levels of a long-term evaluation conducted on the test bench. The objective was to determine the possible contamination of the same and variation of its lubricating properties. The conclusions were made about the actions of materials that remain in touch with biodiesel analysis of data collected during the various trials.

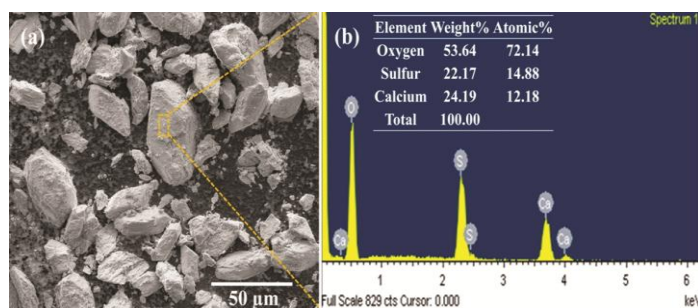
S R Parthiban, M.Loganathan, R Venkatesh & V Vijayan



Earth, Environment & Atmospheric Sciences

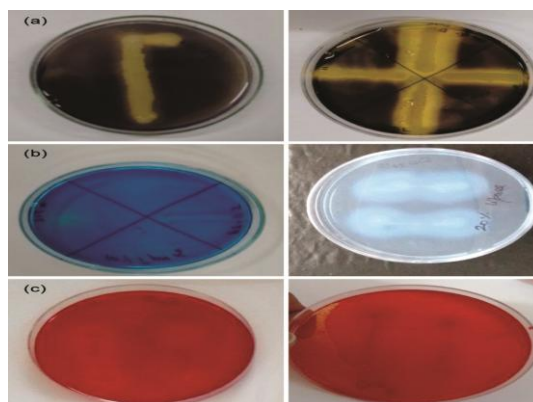
- 612 Thermal Power Plant Flue Gas Desulfurization (FGD) Gypsum Waste Particulates Reinforced Injection Molded Flexible Composites** Low density, thermally insulative and moisture resistant flexible polymer composites were developed using flue gas desulfurization (FGD) gypsum waste particulates with low density polyethylene (LDPE) under injection molding technique without any additive or filler modification. Developed composites were tested for Density, Water absorption, thermal conductivity and mechanical strength. Density of FGD-LDPE composites varied from 0.91 ± 0.01 to 1.33 ± 0.01 g/cm³ with different concentrations of FGD gypsum filler (10–70 weight%). The water absorption showed $0.69 \pm 0.04\%$ for maximum (70 weight%) filler concentration and the corresponding thermal conductivity was found to be minimum (0.3964 W/m/K). The composites were very flexible and exhibited lower tensile strength (6.17 ± 0.05 to 7.15 ± 0.09 MPa), flexural strength (11.25 ± 0.14 MPa) and impact strength (22.70 ± 1.57 KJ/m²) with 50% and 10% filler content. Findings of these results have showed a new path for making flexible composites potentially having applications in sports ground, staircase and instrumentation rooms as a thermal insulation flooring material using FGD waste particulates generated from thermal power plants.

Payal Bakshi, Asokan Pappu, Manoj Kumar Gupta & Avanish Kumar Srivastava



- 617 Isolation of Halophilic Bacteria and Their Screening for Extracellular Enzyme Production** Halophiles are those microorganisms which are found at high salt concentration. These microorganisms have the capability to form a wide array of bioactive substances that have different applications in various industries. This work focussed at the isolation and screening of various halophilic bacterial strains from different places in Rajasthan and Tamil Nadu. Using a complete medium with different salt concentrations, 70 halophilic bacteria were isolated from 4 different sites. These isolated bacteria were then examined and screened out for the synthesis of different extracellular enzymes, such as cellulase, lipase and amylase. Out of the total, 24 isolates were found positive for amylase, 9 for lipase and 16 for cellulase. These enzymes can perform the hydrolytic activity at high salt concentrations. The various halophilic bacterial strains isolated from various places show a prospective for use in a range of biotechnological and molecular biology experiments and the extremozymes obtained from these bacteria have great industrial importance.

Deepa Yadav, Anuradha Singh, Nupur Mathur, Aditi Agarwal & Jyoti Sharma

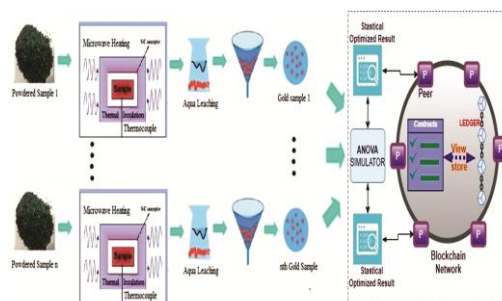


Waste Utilization & Management

623 Trusted and Transparent Blockchain-enabled E-waste Optimization to Recover Precious Metals with Microwave Heating

This present paper presents the maximum recovery of precious and base metals from E-waste with a numerical technique called surface response methodology, and was compared with the actual experimental results. The main goal of this paper is to recover the precious metals like copper and gold with its adjacent metals from unwanted and discarded printed circuit boards, integrated circuits, and standards connectors, with the input variables of microwave power, maximum temperature, and aqua leaching ratio. The obtained empirical information of recovered metals was recorded in immutable distributed ledgers so that every member of the blockchain network can be read and verified through the stored records. These records were also utilized to minimize the error and maximize the precious metal outcomes. The result with blockchain network also shows that identical resemblance between the experimental and statistical predicted data obtained with surface methodology. Further, Smart Contracts has been created and deployed to store and retrieve empirical records in the Hyperledger Fabric Blockchain Platform and then measured the performance using Hyperledger Caliper Benchmark.

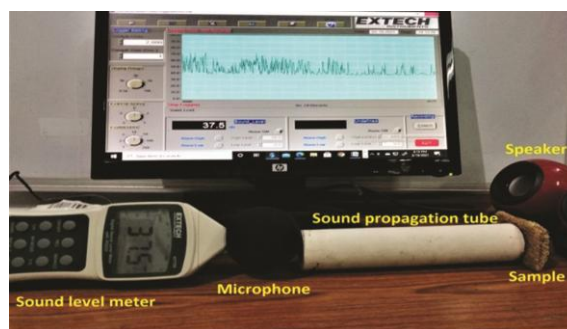
Rajendra Prasad Mahapatra, Satya Sai Srikant, Sachi Pandey, Vikas Chouhan & Raghupatruni Bhima Rao



630 Synthesis and Analysis of Biomass based Green Acoustic Shielding Material

Designing of acoustic shielding material based on biomass has great importance due to its cutting edge scientific mechanism, structure and variety of applications in various fields. *Luffa cylindrica* waste biomass as indigenously available in the most part of the world posses significant contribution in design of acoustic panel due to its versatile, smart and inbuilt networking structure. The nondestructive ultrasonic pretreatment has been used for surface modification with an alcohol blended tartaric acid. The modification in different functional group of the biomass composition and porous activated structure has been confirmed from FTIR and SEM analysis. The presence of inbuilt networking and perforated structure approaches the ideal value of sound absorption coefficient 0.831 with high insulating heat radiation and zero emission of any green house gas to environment can be potentially used as noise shielding material.

Priyanka Priyadarsini Singh & Ganeswar Nath



Author-Reader Platform

638 Instructions to Contributors

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