Journal of Scientific & Industrial Research

VOLUME 78 **NUMBER 09** **SEPTEMBER 2019**

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Management & Information Technology

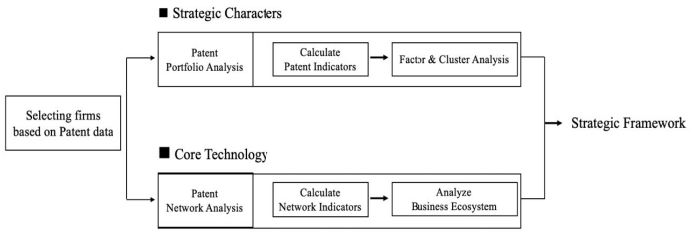
571 Predicting Systemic Banking Crises using Extreme Gradient Boosting

Considering the great ability of decision trees techniques to extract useful information from large databases and to handle heterogeneous variables, this paper applies Extreme Gradient Boosting for the prediction of systemic banking crises. To this end, prediction models have been constructed for different regions and the whole world. The results obtained show that Extreme Gradient Boosting overcomes the predictive power of existing models in the previous literature and provides more explanatory information on the causes that produce systemic banking crises, being the demand for deposits, the level of domestic credit and banking assets some of the most significant variables.

D Alaminos, M A Fernández-Gámez, José António C Santos and J A Campos-Soria

576 Strategic alliance with Frenemy in Electric Vehicle Industry for Commercialization

Eco-friendly technologies are crucial for firms to sustain their competitiveness as well as properly cope with international agreement which encourages to reduce green house gases. Electric vehicle (EV),in terms of this view, is significant since it would be dominant mobilities in the future by allowing firms to have competitiveness and solving for environmental problems. Hence, it is pivotal for firms to commercialize relevant technologies. In order to this, we used patent analysis to identify firms' strategic characters and core technology in electric vehicle industry.



Dong-Hyun Lim and Yeong-wha Sawng

582 The Efficiency of Technology Transfer in Chinese Key Universities

This paper examines the technology transfer efficiency of Chinese universities by using the two-stage DEA model. Moreover, the impact of government funding and reputation on the efficiency was examined as well. The main findings are as follows: (1) technology transfer efficiency of Chinese universities is inefficient, and this is mainly caused by the incompetence of value creation. (2) the effect of government funding on technology transfer efficiency of universities is statistically negative, nonetheless this impact is positively moderated by the university's reputation.

Qing Gao, Feng He, Anitha Moosa and Quan Lv

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586 Selection of Inductor and Capacitor for Buck Converter using Design Equations Comparison

R Kaye, A Kalam and C Ozansoy

A type of DC-DC step down converter is a Buck converter, they are used in power supplies, computers, electric tools, cars and many other electronic devices. Their purpose is to step down one DC voltage to another DC voltage as efficiently as possible. This efficiency can only be obtained by understanding the fundamentals of the converter and selecting the correct components when designing a converter for an application. The two main components in the converter are the inductor and output capacitor. Various approaches have been taken to find optimum values for these components. This paper will look at some of these methods to assess how appropriate they are in terms of converting the DC voltage to a reduced level through modelling the circuits with MATLAB with values obtained for the inductor and output capacitor from these methods.

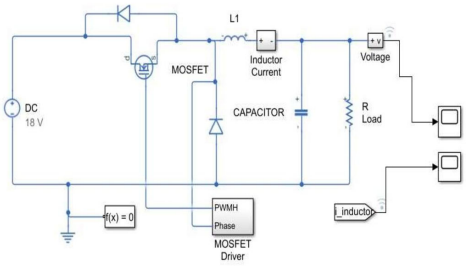
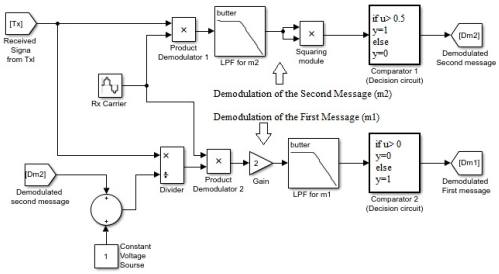


Figure 2: Simulink circuit used for testing

589 A New Digital Modulation Technique: Two Messages in One Carrier

S Maharatha and M Mukhopadhyay

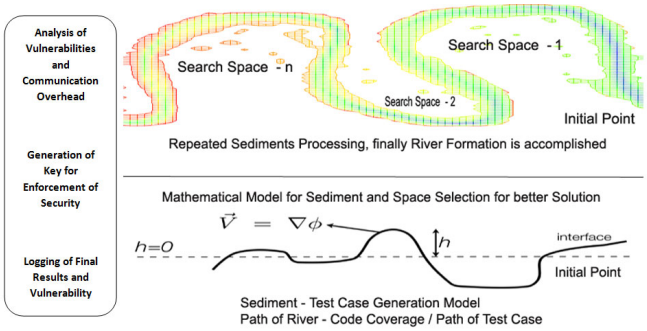
A new digital modulation concept and technique have been proposed in this paper. Two entirely separate digital messages shall modulate one carrier unlike traditional Digital Modulation or even unlike QAM or APSK which might open the numerous possibilities of various future applications in channel modeling or in data communication. All Simulation models are being designed over Simulink



596 Dynamic Key Based Algorithm for Security in Cloud Computing Using Soft Computing and Dynamic Fuzzy Approach

P Kumar, A Gupta and S Kumar

As cloud computing is escalating by number of services, there are lots of issues regarding vulnerability and integrity in the data centers from where these cloud services are disseminated. This research manuscript presents and implements a unique and effectual approach for security of data centers using dynamic approach for encryption during communication and accessing the cloud services. The results in the projected novel approach are effective in terms of cost, complexity and overall performance.



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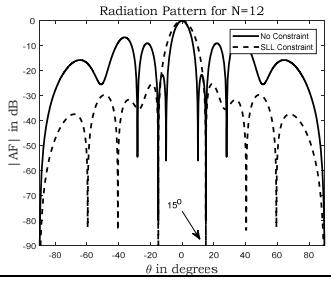
601 Linear Antenna Array Synthesis for Unconstrained and Constrained Nulls Using Social Group Optimization Algorithm

In wireless communications, the radiating system is required to produce radiation patterns which are entirely described by nulls along with some constraints like sidelobe level. With the latest developments in the wireless communication systems, the Linear Array Antenna (LAA) design emerged challenge to the antenna engineers. In this paper, the LAA synthesis is performed using novel Social Group Optimization Algorithm (SGOA). The synthesis technique employs non-uniform amplitude distribution. The array synthesis problem is transformed into an optimization problem with number of elements as the dimension of the problem.



A R Sheik and K S R Krishna

604 Luminance-Chrominance-Gradient Based Technique for High Dynamic Range Image Fusion

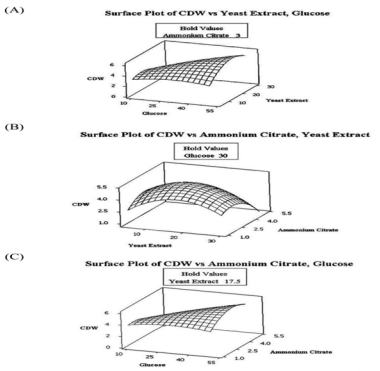
The High Dynamic Range (HDR) technique involves capturing the same scene multiple times with different exposure values and produces an output image with more dynamic range. Instead of doing all processing in RGB color space, we proposed to do it in Luminance Chrominance Gradient colourspace, which results the output images to be more natural and pleasant to perceive with less noise. This experiment was evaluated and analysed with BAR and AEE[1]methods and the results are compared. We showed that, our LCGHDR method is computationally efficient and able to remove any colour distortions originated from the RGB color channel.

B Ravi Kiran and V Valli Kumari

S & T and Industrial Research

608 Medium Optimization using Response Surface Methodology for High Cell Mass Production of *Lactobacillus acidophilus*

Lactobacillus acidophilus belongs to probiotic microflora inhabiting human gut that provide beneficially enhances human health. Besides balancing the intestinal flora and inhibiting pathogenic microorganisms, the existence of *L. acidophilus* inside the intestine can restore gut flora following antibiotics treatments. However, usually microorganisms from lactic acid bacteria group are known as fastidious microorganism and naturally required complex nutrients to promote their cellular growth. Therefore, twelve reported cultivation media were screened for their capability to support cell growth of *L. acidophilus*. The most suitable medium was further optimized using response surface methodology (RSM) and Box-Behnken design to maximize cell growth of *L.acidophilus*.



A N Kepli, D J Dailin, R A Malek, EA Elsayed, O M Leng and H A El-Enshasy

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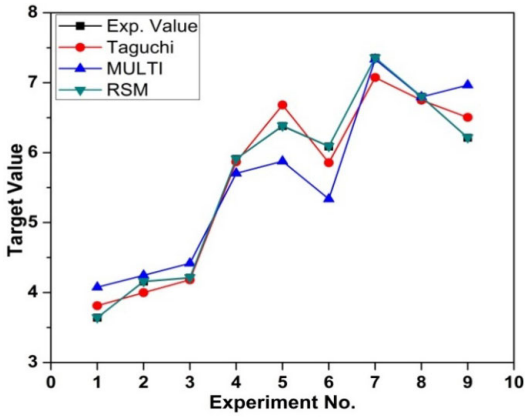
615 Study the Effect of Machining Process Parameters on Die-Sinking EDM for Al5083/B_4C Composite

Ram Singh, Rabisankar Debnath and RN Rai

The study mostly emphasizes on selecting the best machining parameters among the conducted experiments and evaluating the optimal machining parameters for Al5083/10wt%B_4C (boron carbide) composite in electro discharge machine (EDM). The paper is an integration of equally weighted experimental and computational study. In the experimental part of the study, specimen of Al5083/10wt%B_4C is prepared by the popular ex-situ technique in an induction furnace through stir casting process.The experimental part includes design of experiment by Taguchi's method, performing the experimentation for the different machining combinations and finally measuring of performance parameters.



620 An Experimental Investigation of Thermal Conductivity of TiO_2 Nanofluid: Proposing a new Correlation

R P Singh, K Sharma and A K Tiwari

In this study, TiO_2/Water nanofluids were prepared at different concentration by two step method. Zeta potential technique was used to investigate the stability of the colloidal solution of the titanium oxide in the base fluid (water).The effect of temperature (25-50^oC) and solid volume concentration (0.5-3.0%) on the thermal conductivity of nanofluid was observed. Based on experimental observation and with curve fitting, a new empirical correlation was proposed for calculating the thermal conductivity of the nanofluid. It was observed that at higher temperature, enhancement in the thermal conductivity of nanofluid was more with an increase in solid volume fraction while at low volume fraction, the effect of raise in temperature on thermal conductivity was observed less. The highest enhancement of 15.69% in thermal conductivity observed with 3.0% volume concentration at 50^oC.

622 Reclamation of Model Wastewater Containing Rhodamine B by Electrochemical Fenton (ECF) Process

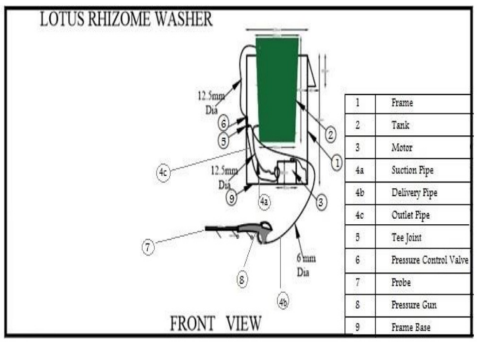
N R Vaghela and K Nath

Treatment of the Synthetic Rhodamine B (RhB) wastewater by Electrochemical Fenton (ECF) processes for colour removal in batch mode using commercially available iron plates as electrodes was studied. Colour removal efficiency was determined for the ECF process by considering the effects of different variables such as pH, current density, RhB concentration and temperature. Improvement in colour removal efficiency was obtained when H_2O_2 was added as an oxidizing agent. The colour removal efficiency reached 94.89 % at the optimum experimental conditions (pH 3.0, 100 A/m^2, 50 mg/l RhB concentration, 5 minutes, 30^oC and dosage of 0.2 M H_2O_2). Electrical energy consumption was calculated as 2.09 KWh/m^3. The ECF process was found capable to achieve the higher colour removal efficiencies with potential for wastewater treatment.

CONTENTS

629 Design, Development and Evaluation of Portable Washer for Lotus Rhizomes

The study aimed to isolate soil bacteria and screen them for thrombolytic activity. Effect of process parameters on enzyme production were analyzed using one factor at a time approach. Isolate S46 demonstrated highest blood clot dissolution (15.64%) and was chosen for further study. Based on the partial 16S rDNA sequence, isolate S46 was identified as *Bacillus cereus*. Addition of sucrose and casein (1% w/v) to the broth resulted in highest enzyme yield (130 U/ml). Enzyme production improved in presence of $MgSO_4$ (0.08%, w/v), $FeSO_4$ (0.004% w/v), respectively. Enzyme production was best (186.66 and 210.86 U/ml) at pH 8.0 and 30 °C. Maximum enzyme production (220.86 U/ml) was reported at 72 h with inoculum size of 1.5% v/v.



S Z Hussain, S Naseer, M Farooq, U Mohammad Mir and Ajaz ul Mumtaz

Energy & Environment

634 Emission and Performance Analysis of Green Gas in a VCR Engine

The current advancement in producing the organic-based fuels, the gaseous fuel such as Green gas promises to be used in the vehicular engine. The gasification technique is used to gasify biomass such as rice husk, bagasse, wood chips resulting in production of organic green gas. It is prepared by gliding air and steam through the thick coal at different temperature range. Due to inertness, knocking tendency is higher in green gas, use of green gas tends to higher emission of CO, especially at lean condition through gasification technique. In our results of emission analysis, there is significant reduction in $SO_x$and NO_x from the engine running on green gas dual fuel operation. The use of green gas as an alternative fuel is founded as the sustainable and eco-friendly energy source.

M Saraswat, A Dixit and R K Shukla

Author-Reader Platform

639 **Instructions to Contributors (Extended)**

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