**Foreword and Editorial**

**International Journal of Advanced Science and Technology**

We are very happy to publish this issue of an International Journal of Advanced Science and Technology by Science and Engineering Research Support soCiety.

This issue contains 8 articles. Achieving such a high quality of papers would have been impossible without the huge work that was undertaken by the Editorial Board members and External Reviewers. We take this opportunity to thank them for their great support and cooperation.

The paper “Image Processing for Face Recognition Rate Enhancement” presents the impact of face image pre-processing in rising the face recognition rate, considering the face images with low contrast, bad or dark lighting. Three preprocessing steps including image adjustment, histogram equalization and image conversion to Joint Photographic Experts Group (JPEG) or (JPG) and Bitmap (BMP) are used to enhance the contrast and the quality of face images respectively. For dimension reduction and feature extraction purposes many techniques are adopted such as Principle Component Analysis (PCA), Linear Discriminant Analysis (LDA), Kernel Principle Component Analysis KPCA and Kernel Fisher Analysis (KFA) and are used to evaluate the effect of illumination variations and image file formats on these techniques.

Paper “Integration of Dynamic Resource Management in Discrete Event Models Using Arena Software” states that computer modelling of many real life systems is always challenged with how the dynamic changes of resources and queues are handled and integrated. In this paper, Authors integrate the dynamic changes of resources and queues in a discrete event model using Rockwell Software Arena, one of most used software tools in modelling discrete events, as it includes and considers the resources by queuing components both at fixed and predetermined level. The model proposed by the authors will extend this to the dynamic level by including the multiple queues that may require regrouping, verification and reallocation. The structure of this new model simply replaces all the external approaches to the management and synchronization of the resources by an internal/within the software integration structure. This model may also be considered and added to the Rockwell Arena Smart file library as a solution to dynamic resource management.

The paper “Pelletized Cut Rubber: An Alternative Coarse Aggregate for Concrete Mixture” aimed to develop an acceptable concrete mixture with pelletized cut rubber tire particles as substitutes to coarse aggregates in concrete mixes adopted from “AA” concrete mixture that can be used for building construction. The study also tries to point out the fact that not all discarded materials classified are waste but can be converted to other uses by manipulating its form to suit the desired use. In this case, pelletizing cut rubber tires that can no longer be used by vehicles nor re-threaded for further use. Adding them as partial or complete substitutes for gravel in concrete mixes, cut rubber tire pellets could lower cost of production and saving valuable funds and resources to be used for construction projects.
The paper “Design and Fabrication of an Automated Solar Boat” states that environment awareness has been developed worldwide so progressively and turns into the crying needs over the last few decades. Researchers in all disciplines have a particular obligation of development which is environmentally friendly and lead towards sustainable future development. Solar energy is a prodigious renewable energy source which has enormous energy existing as heat and light and can convert it into electricity. Besides the domestic uses, solar power can be utilized as the alternative of the oil in boat’s fuel and capable of minimizing the water pollution and fuel cost as well. The purpose of this research is to design and fabricate a boat based on solar power. The boat will be conducted by the energy processed from solar by minimizing environmental pollution and fuel cost. Besides, for any cloudy or emergency condition, a backup power system integrated with the photovoltaic cell will drive the boat to make the system more secured. Both mechanical and electrical part of the boat has been designed which is found more reliable, efficient and economic.

Paper “Comparison of Properties of Transversely Isotropic Lamina Using Method of Cells and Composite Cylinder Assemblage” states that composite structures are finding increasing applications because of their high specific stiffness and strength. The behavior characterization of composites under different loading conditions necessitates thermo-mechanical properties of individual layers. The paper deals with determination of elastic and thermo-mechanical properties of transversely isotropic lamina using Method of Cells and comparison of the results with Composite Cylinder Assemblages. The prerequisite properties of the fibers and matrix used are referred from standard data bank to determine the relevant properties of lamina. Specially orthotropic 3D composites are characterized by nine elastic properties, these properties are determined using Method of Cells, Composite Cylinder Assemblages.

The paper “Impulse Response Identification of Minimum and Non Minimum Phase Channels” proposes an algorithm based on third order cumulants for identification of the linear system (Finite Impulse Response (FIR)) with Minimum Phase (MP), and Non Minimum Phase (NMP) excited by non-Gaussian sequences, independent identically distributed (i.i.d). The proposed algorithm, for different signal to noise ratios (SNR) and for different sample sizes, is compared to the Zhang method for 50 Monte-Carlo runs.

The paper “A Review on Driver Face Monitoring Systems for Fatigue and Distraction Detection” states that every year, many car accidents due to driver fatigue and distraction occur around the world and cause many casualties and injuries. Driver face monitoring systems is one of the main approaches for driver fatigue or distraction detection and accident prevention. Driver face monitoring systems capture the images from driver face and extract the symptoms of fatigue and distraction from eyes, mouth and head. These symptoms are usually percentage of eyelid closure over time (PERCLOS), eyelid distance, eye blink rate, blink speed, gaze direction, eye saccadic movement, yawning, head nodding and head orientation. The system estimates driver alertness based on extracted symptoms and alarms if needed. In this paper, after an introduction to driver face monitoring systems, the general structure of these systems is discussed.

The paper “Ensemble Clustering based on Heterogeneous Dimensionality Reduction Methods and Context-dependent Similarity Measures” discusses one method of clustering a high dimensional dataset using dimensionality reduction and context dependency measures (CDM). First, the dataset is partitioned into a predefined number of clusters using CDM.
Then, context dependency measures are combined with several dimensionality reduction techniques and for each choice the data set is clustered again. The results are combined by the cluster ensemble approach. Finally, the Rand index is used to compute the extent to which the clustering of the original dataset (by CDM alone) is preserved by the cluster ensemble approach.

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