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 12 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 “Vertical Handover Decision Algorithm from WiMAX to WLAN based on the Mobile Node’s Speed and the Session’s Priority” proposes a vertical handover decision algorithm from WiMAX to WLAN networks based on the user’s speed and session’s priority (non-real-time or real-time service) of the mobile nodes. The IEEE 802.21 standard is used as a layout for implementing the algorithm. The implementation of the handover algorithm avoids unnecessary vertical handover from WiMAX to WLAN in scenarios with various traffic types and speeds of the mobile nodes.

Paper “Using Heuristics Based Approach for Segmentation and Recognition of Printed Arabic Characters” propose a flexible template-matching algorithm for word segmentation, and structural analysis of features extraction is used for character recognition in the printed Arabic text. The input text image is preprocessed by the binarization and then by morphological operations. A vector quantization of the thinned image (VQTM) is created based on the idea of a freeman chain code tracking method. In the segmentation process, 113 character templates are compared for partially/completely existence in the VQTM. A non-linear filter is applied on the segmented regions to extract the termination and bifurcation features. The spatial distribution of the extracted features and other statistical characteristics are analyzed for the verification of recognition.

In the paper “Adding a Pre processing Phase to ASMOV for Improving the Alignment Result”, Authors examine how a pre-processing phase can improve the results of the matching process. A pre-processing phase is added to the matchers for the analysis of input ontologies so as to detect some inappropriate patterns which are modeled by various developers. Then, refactoring operations are utilized on detected patterns for achieving assimilated ontologies. Finally, the proposed approach is tested by ASMOV (Automated Semantic Matching of Ontologies with Verification), which is one of the top matchers in OAEI (Ontology Alignment Evaluation Initiative).

The paper “Bayesian Analysis of Exponentiated Gamma Distribution under Type II Censored Samples” is concerned with posterior analysis of exponentiated gamma distribution for type II censored samples. The expressions for Bayes estimators and associated risks have been derived under different priors. The entropy and quadratic loss functions have been assumed for estimation. The posterior predictive distributions have been obtained and corresponding intervals have been constructed. The study aims to find out a suitable estimator of the parameter of the distribution.
The paper “Multi-stage Acoustic Fault Diagnosis of Motorcycles using Wavelet Packet Energy Distribution and ANN” analyze the sound signals produced by motorcycles to locate the faults in subsystems. The work proceeds in three stages, the first stage detects the fault, the second stage identifies the faulty subsystem and finally the third stage locates the fault.

The paper “Enhanced Packet Scheduling Algorithm for Multihop Wireless LANs” enhances the network performance in wireless LANs by improving the fairness index and average end-to-end delay through the scheme identified as Proposed Packet Reverse Function. The proposed scheme also focuses on reliable delivery of data from sources to its destinations.

In the paper “An Analysis of QoS specific Coherence Issues in Distributed Networks”, distributed Systems remained one of the most recent development fields in computing research. The parallel applications development faced enormous hindrance in QoS delivery due to resource hungry queuing models and complex memory patterns. Being a collection of multiple autonomous systems, a distributed system's efficiency lies in best coordination of its middleware and coordinating modular layers. The concurrency is maintained by implementing Integrity constraint rules. The paper assesses various coherence addressing schemes for QoS delivery in Distributed Network environment.

The paper “Multi-Agent Based Search Engine for Researchers and Scientists” present a framework for multi-agent based search engine tool that can help the researchers to find their desired information in an efficient way and with the minimal pointer clicks. Through this methodology, the researchers would be able to obtain a summarized report along with the search details that closely match to the supplied search phrases. The same summary report can also be generated based on the research topics inscribed in the researchers’ profile or based on the history of their previous WWW usage.

The paper “Test Cases Design for Software Database Provisioning Development” presents the concepts of test case based approach for the development of software systems. A variety of software development approaches are presented wherein they share some common methodology stages wherein testing plays a vital role for the success of the product. Software testing provides an objective, independent view of the software to allow the end-user to appreciate and understand the risks of software implementation.

The Author of paper “Confrontation of Genetic Algorithm Optimization Process with a New Reference Case: Analytical Study with Experimental Validation of the Deflection of a Cantilever Beam” deals with the optimization of a cantilever beam submitted to its own weight. In a first approach, the beam section can be equal to two values is considered and the section with changing location, which minimizes the deflection. An analytical model is proposed with an experimental validation that will allow the optimization of the shape of the beam. Then, a numerical code is developed based on a genetic algorithm that is validated on this case. In a last section, numerical optimization code is used to find the best shape of the beam, where the section can take any values in a given range, to minimize its deflection. These two study cases can serve as reference case to validate numerical approach for automatic structure optimization.

The Authors of “Development of Hexapod Robot with Manoeuvrable Wheel” designed and developed a hexapod robot with manoeuvrable wheel. The purpose of the hexapod robot
with manoeuvrable wheel is to ease the movement either on the flat surface or on the inclined surface. On the flat surface, the robot will move using the manoeuvrable wheel while on incline surface, the robot will climb using its legs. The decisions for the robot to use either wheel or legs are based on the sensory devices and algorithm develops at the controller attached to the robot.

Paper “Fuzzy based Quantitative Evaluation of Architectures using Architectural Knowledge” aims at improving the efficiency of the architectural design process through architectural knowledge management (AKM) support. A meta-model called ADUAK is developed to support the AKM. The success of any system is down to the attention paid to the design process. ADUAK has the potential to help the architects in improving the software architecture process by providing competing design alternatives to design software architecture. The paper propose how ADUAK generates the necessary knowledge to drive the evaluation process in an ontological manner. A quantitative model for evaluating a set of candidate architectural designs based on a stated objective has been developed and its usage has been illustrated using a simple case study. The developed quantitative model relies on the Fuzzy AHP method for computing relative priorities of quality attributes.

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