Foreword and Editorial

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 “Effects of Near Infrared light Application Combined with Aerobic Exercise on Excessive Abdominal Fat and Obesity” conducted to examine the effects of a near infrared-light-emitting diode (NIR-LED) in conjunction with low endurance exercise on obesity and abdominal fat. Twenty-six overweight adolescents aged 14-15 years were divided into an experimental and control group. Participants in the experimental group performed endurance exercise on a treadmill while wearing NIR-LED belts on their abdomens. The exercise intensity, duration, and frequency were 50% VO2 max, 45 min/session and three days per week for four weeks. Participants in the control group underwent the same exercise protocol as those in the experimental group. The only difference between both groups was that the participants in the control group used belts that have no NIR-LED. The results of this experiment demonstrated that participants in the experimental group showed a significantly reduced body mass index (BMI), circumference of waists, and percentage of body fat when compared to participants in the control group. These results suggest that application of the NIR-LED is an effective method for the treatment of obesity and reducing abdominal fat. It postulated that NIR stimulated the biological functions of cells situated at the abdominal region, which made more fat available for burning during endurance exercise.

Paper “Performance and Emission Analysis of Diesel Engine Using Oxygenated compounds” studied the addition of oxygenated compounds to diesel, supply additional oxygen which results in more burning of the fuel and thereby reducing emissions. In the present study, two oxygenated compounds, such as Ethoxy ethanol and Ethylene glycol are considered on a 3.7KW, water cooled, and kirloskar engine. The selected oxygenated compounds are blended with diesel fuel in proportions of 5% and 10% by volume and the experimental study is conducted to evaluate the performance and emissions of the diesel engine. The data obtained is compared with the conventional diesel fuel and the results reveal that Brake Thermal Efficiency (BTE) decreased with increase in the blend percentage. CO2, HC emissions decreased while NOx emissions increased.

In the paper “Use of Recycled Glass Bottles as Fine Aggregates in Concrete Mixture” aimed to design a concrete mixture with recycled bottles as an alternative fine aggregates for mass housing projects that will meet the American Society for Testing and Materials (ASTM) requirements in order to help contribute to the industry in saving the environment, to encourage the government to find solutions regarding the disposal to landfills of waste materials and provide new knowledge to the contractors and developers on how to improve the construction industry methods and services by using recycled bottles, and to sustain good
product performance and meet recycling goals. A conventional concrete product was compared to concrete with recycled bottles of the same proportions.

The paper “A Hybrid Algorithm Using a Genetic Algorithm and Cuckoo Search Algorithm to Solve the Traveling Salesman Problem and its Application to Multiple Sequence Alignment” used a cuckoo search optimizer (CS) along with a GA in order to avoid the local minima problem and to benefit from the advantages of both types of algorithms. A 2-opt operation was added to the algorithm to improve the results. The suggested algorithm was applied to multiple sequence alignment and compared with the previous algorithms.

Paper “Unsteady MHD Free Convective Visco-Elastic Fluid Flow Bounded by an Infinite Inclined Porous Plate in the Presence of Heat Source, Viscous Dissipation and Ohmic Heating” the present study deals with an unsteady magneto hydrodynamic free convective, Visco-elastic, dissipative fluid flow embedded in porous medium bounded by an infinite inclined porous plate in the presence of heat source, and Ohmic heating under the influence of transversely applied magnetic field of uniform strength. The equations governing the fluid flow are solved using a multiple parameter perturbation technique, subject to the relevant boundary conditions. Expressions for velocity and temperature distributions are obtained. Non dimensional skin friction coefficient and the rate of heat transfer in the form of Nusselt number are also derived and illustrated using graphs and tables. The effects of various physical parameters on the above flow quantities are discussed.

This paper “Design and Simulation of FFT Processor Using Radix-4 Algorithm Using FPGA” simple address mapping scheme and the modified radix 4 FFT also proposed. FPGA was majorly used to develop the ASIC IC’s to which was implemented. Here it simulated and synthesized the 256- point FFT with radix-4 using VHDL coding and 64 point FFT Hardware implementation it designed code using System C. Finally, the pipelined 256-point FFT processor can be completely implemented within 19.103ns.

The paper “Derivation of a Closed-Form Equation Describing the Magnetophoretic Velocity of Superparamagnetic Microbeads in Microfluidic Channels under the Influence of an External Magnetic Field” objected to obtain an analytical function that describes the dynamics of motion of superparamagnetic beads in a microfluidic channel filled with a liquid such as water or blood under the influence of an external magnetic field. A closed-form equation was derived from first principles and then simulated using MATLAB® and the results compared to those obtained experimentally by other researchers.

This paper “Compatible MPID Optimal Controller for flexible Operation of two link Manipulator” initiate the proto type differences between responses of torques with PID Controller in open loop as well as in closed loop condition. For the closed loop, the physical phenomenon of PID Changes named as Modified PID Controller. The MPID Controller provides better performance rather than open loop PID at far end of two link Manipulator arm. The Electro mechanical modeling of the two link manipulator was done by using State Space technique named as an M-File. The entire graphical representations are providing by using MATLAB/Control tool box.
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