Foreword and Editorial

We are very pleased to publish this issue of an International Journal of Hybrid Information Technology by Science and Engineering Research Support Society. This issue contains 36 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 extend our appreciation and heartfelt gratitude to them for their great support and cooperation.

The paper “Routing of Military Communication Networks Based on Cloud Genetic Algorithm” aims at practical application needs of information transmission in existing military communication networks, and proposes routing models of military communication networks that satisfy military operational requirements. As routing is NP-hard problem, it has problems such as easily being early-maturing and caught in local optimum if traditional genetic algorithms are used to solve this kind of problem. Targeting at problems above, a CGA algorithm for solution is designed, which is based on excellent characteristics of cloud model and integrates with basic principles of genetic algorithm. On the basis of cloud model, CGA algorithm can dynamically adjust the crossover probability and mutation probability according to its fitness value, which shows self-adaptive characteristics of genetic parameters and reflect randomness and uncertainty during natural search process; thus the method is with good tendency and can promote diversity of population, and it not only improves the search efficiency, speeds up convergence, but also prevents algorithm from local optimum. The algorithm is then applied to route selection of the military communication network in a C4ISR simulation system.

According to the paper entitled “MFAC based SMC Combine Algorithm for the Stability of PMDC”, a discrete time sliding mode control of PMDC motor can be combine with the Model Free Adaptive Control (MFAC) to reduce time, cost and difficulty of nonlinear reliable system commonly used mathematical modelling which is quite difficult to operate. As in system model it does not require any prior data but only depends upon data collected by system Inputs/Outputs. Theoretically, to increase the rate of convergence, pseudo partial derivative (PPD) must be used for MFAC control Algorithms and strict mathematical assumptions can be made to verify the stability of the system. This research proposed a MATLAB based valid control algorithm used for speed and position tracking control of PMDC linear motor. This research also compares analysis between PID and model free learning adaptive control (MFLAC) using simulations and verify the speed and position tracking of linear PMDC motor has a better control performance with robust and precise tracking.

In the paper “Automated Ultrasound Doppler Angle Estimation Using the Probabilistic Hough Transform”, modern Doppler ultrasound can estimate the velocity of blood flow in vessels quantitatively and noninvasively. Once the Doppler angle, i.e. the angle between the insonating beam and the direction of blood flow, is given, the velocity of flow can be estimated using the standard Doppler equation. However, the operator is required to manually tune the vessel slope cursor based on the direction of the vessel wall in the B-mode image to specify the Doppler angle. This manual tuning process is time consuming and error prone. In this paper, a novel automatic way of specifying the Doppler angle is
proposed to improve the efficiency and accuracy of the blood flow velocity measurement. Their approach starts with the image preprocessing and segmentation of blood vessel in ultrasound common carotid artery image. The segmentation step is followed by an estimation of Doppler angle based on the probabilistic Hough Transform technique. On 15 ultrasound video sequences of the common carotid artery taken from 4 healthy subjects, the results generated by the proposed method are compared to the angles specified by an expert operator. The deviation of the angles estimated by the proposed method from the angles specified by the operator is 4.15 degrees ± 2.92 (mean ± standard deviation). The proposed method eliminates the need of manually tuning of the vessel slope cursor and the estimated angles are in highly agreement with the ones specified by the operator. It has the potential to enhance the work flow and improve the speed of the ultrasound spectral Doppler examination.

In the paper “A Novel Allocation Algorithm for Evacuation Simulation Based on Cellular Automaton”, they study the evacuation simulation in buildings using the cellular automaton theory. First, they study the rules of path selection in personnel evacuation. Second, they introduce the individual competence to solve the conflict problem caused by multiple people compete for the same cell. Third, they propose a novel evacuation allocation algorithm and improved the simulation model. The proposed model takes the individual competence, the conformist mentality, and the fog influence into consideration.

In the present work entitled “Optimization of Cutting Parameters Using Weighted Principal Component Analysis (WPCA) Combined with Grey Relational Analysis (GRA) While Turning of AA7075”, an experimental study is made to optimize the cutting parameters for the multiple responses in CNC turning of AA7075 under dry environment using a tungsten carbide tool of 0.4 mm nose radius. The cutting speed, feed and depth of cut are selected as control factors at three different levels and Material Removal Rate (MRR) and Surface Roughness (Ra) are considered as the experimental responses. The Multiple-responses are optimized using Weighted Principal Component Analysis (WPCA) combined with Grey Relational Analysis (GRA) and then the significance of the cutting parameters is determined by the Analysis of variance (ANOVA).

Reordering model is crucial in statistic machine translation (SMT). This paper “A Post-Reordering Model based Maximum Entropy in Statistic Machine Translation” proposes a novel post-reordering model which reorders translation output after decoding. As none additional syntactic tool used and the location their model worked, their model can be utilized in SMT of any language pairs and any translation model. Unlike other methods, their model design four orientations (monotony, swapping, discontinue monotony, discontinue swapping) to capture more possible reordering operations with sentence. In order to carry out long-distance reordering in SMT, they put forward a new stack shift-reduce algorithm to recombine any two phrases which are not necessary neighbor. According to the experiment, SMT combined with their model have a significant raise in BLEU compared with the state-of-art SMT. What is more, their stack shift-reduce algorithm do produce new output sentence efficiently.

The study entitled “Piecewise Regression Using Cubic Spline-A Case Study” explains that watershed erosion reveals spatio-temporal variability and determines sediment yield which is a key to appropriate watershed management. Considering several Curve Numbers (SCS, 1956) as nodal point in the domain, in this paper, they have constructed the approximate curve using cubic splines corresponding to the Sediment Yield Index (SYI). The aim of this construction is to predict SYI corresponding to any arbitrary curve numbers lying in the domain of construction. It is observed that cubic spline show a satisfactory performance, with Nash efficiency of 61.36%, they have established the
quality of approximation by comparing the given value with the approximate value of SYI at certain nodal point and noted that these values are quite closed and hence it is concluded that the approximation is satisfactory and may be quite useful in field applications.

The article entitled “Compromise Ratio Method of MADM Problem Based on a New Interval-valued Intuitionistic Fuzzy Entropy” points out the shortcomings of the existing entropy measures, and puts forward a new improved interval-valued intuitionistic fuzzy (IVIF) entropy measure. The new entropy measure not only considers the absolute value of the deviation between membership and non-membership degrees, but also considers the effect of hesitancy degree of IVIF sets. For the two cases with attribute weights information unknown and partially known, new weighting methods are put forward by using the extended entropy method and by establishing the minimum entropy optimization model to solve the optimal weights. Further a compromise ratio method of intuitionistic fuzzy multi-attribute decision making (MADM) problems is put forward, and application examples proved the effectiveness and feasibility of the proposed methods.

Paper “Modified Comprehensive Learning Particle Swarm Optimization for Numerical and Takagi-Sugeno Fuzzy System Modeling” says that modifications for comprehensive learning particle swarm optimization (M-CLPSO) is proposed for numerical problems and modeling Takagi-Sugeno(T-S) Fuzzy System. A self-adaptive strategy is adopted to adjust the value of acceleration coefficient dynamically. In the late stage of the evolution, Gaussian disturbance is hydride with algorithm to help the stagnant particles to escape from standstill state. The effectiveness of the proposed algorithm is verified by numerical experiments and T-S fuzzy system modeling.

Considering the cutting stock problem and lot sizing problem for tower transmission industry, the paper entitled “Effective Mathematical Simulation for One-Dimensional Cutting Stock Problem using Heuristics Approach” present the new effective mathematical simulation for One-Dimensional Cutting Stock Problem (1D-CSP) by applying heuristic approach. This approach works within pre-defined trim except at the end of cutting process. The pre-defined trim is called the sustainable trim which is based on average order lengths and given stock lengths. By considering the constraints like space, manpower etc., the main objective of this study is to minimize the trim loss. Powar et al. (One-Dimensional Cutting Stock Problem (1D-CSP) with First Order Sustainable Trim: A Practical Approach, International Journal of Computer Science Engineering and Information Technology Research (IJCSEITR), 3(3), 227-240, 2013) have been already designed a mathematical model in which cutting of at most two order lengths is considered in the cutting plan in such a way that no third order length can be cut before the cutting of two order lengths under consideration. In this paper, they have modified this model and relaxed the condition of exclusive cutting of only two order lengths. When out of two, only one order length is left to cut, they may club the third order length for cutting process. In order to justify their modification, they have discussed some numerical examples.

In the paper “Robust Visual Tracking via Collaborative Voting with Structured Sparse Representation”, sparse representation based methods have recently attracted much attention in visual tracking due to the robustness to corruption, occlusion and other challenging issues. The target templates and the candidates have been applied as training samples and inputs for the method. However, the sparse coefficients cannot be made full use to discriminate between the target and the background, hence tracking method may fail when there is similar object or occlusion in the scene. In this paper, they propose a
novel visual tracking method based on collaborative voting with sparse representation. Different from previous methods, visual tracking is formulated as an object recognition problem in the proposed method, which makes the tracking task more robust to occlusion. The collaborative voting exploits the contributions of the bases in dictionary based on alignment-sum and alignment-max pooling operating, which take the special layout of local patches into consideration and improve the robustness of the proposed method. In addition, a weight vector is generated based on alignment pooling to measure the importance of a template.

According to the paper entitled “Improved Differential Evolution Algorithm based on Deep Predatory Search and Secondary Gradient Acceleration”, the traditional differential evolution algorithm has premature convergence problem due to the greedy strategy. To avoid this drawback, the differential evolution algorithm based on deep predation and secondary gradient acceleration is proposed. The entire search space is first used for breadth search, and a gradient acceleration trigger parameter is adopted. The local search based on gradient acceleration is then carried out for better individuals in population. The algorithm is able to converge quickly to the global optimum. Furthermore, in order to maintain the population diversity, a new differential mutation operator is designed. By comparison with existing algorithms, the proposed algorithm in this paper can effectively escape from local optimum, and avoid premature convergence. Finally, they verified their algorithm in the load allocation optimization in hot rolling mill, and the results show that the feasibility and the effectiveness of the method is promising.

Paper “Map-Reduce-Join-Locate: a Data Processing Framework for Decreasing the Processing Cost on Large Data”, the related retrieval operation of cloud database is often very time-consuming, takes up a lot of storage and network transmission cost. MapReduce model provides processing framework for cloud database connection operation, but the processing performance should be further optimized. Based on the analysis of the MapReduce processing framework, this paper proposes a Map-Reduce-Join-Locate processing framework. The framework consists of four phases, Map, Reduce, Join and Locate. The new framework can be deployed on the original MapReduce framework without additional modification.

The study “A Method of Weld Recognition Based On Threshold Optimization and Detection Operator” states that in order to accurately recognize weld and reduce the interference of noise point, fusion technology is applied in welding image processing. Calculation of optimal threshold obtained weighted fusion method by application of two-peak and improved Otsu method, threshold generation respectively into Roberts operator and Canny operator for edge detection, then superposition of fusion, finally, through the Hough transform to extract weld coordinate.

The paper “A Circular Split Ringe Resonator (CSRR) Left Handed Metamaterial (LHM) having Simultaneous Negative Permeability and Permittivity” presents a design and simulation of a new structure having simultaneous negative permeability and permittivity which called double negative metamaterial (DNM) or left handed material (LHM). The LHM structure consists of five circular split ring resonators on one side of dielectric substrate and a set of wire couples on other side. CST Microwave Studio is used to model the LHM structure to calculate the scattering parameters (S11 and S21) from which the complex permittivity, permeability and refractive index can be extracted. MATLAB is used for verification of obtained negative values of structure’s parameter. The circuit was manufactured and measured.
The paper “A Movie Customer Satisfaction Index Model Based On Structural Equation Model” reviews relevant customer satisfaction theories and figures out the impact factors of movie customer satisfaction. On the basis of the above theoretical analysis, this paper proposes M-CSI model, an index for movie customer satisfaction based on structural equation model. Then the M-CSI model was tested by 282 movies in 2014 from Mtime, which is a popular movie network in China. This paper verifies that a movies publicity effort and user expectation has a direct impact on its customer satisfaction and loyalty, and then gives a user satisfaction score to every movie according to different weights.

The article “Research on Opening and Closing Synchronization of Flexible Hatch on Space Shuttle” says that the space industry is developing rapidly and the emergence of the space shuttle is especially concerned by all aspects. The position accuracy of the shuttle hatch is always a key problem when the space shuttle is working in orbit. When hatch position accuracy meets the requirement of central lock acquisition domain, central lock can capture and lock, otherwise it will lead to the hatch cannot close properly. Aiming at this problem, this paper solved it based on the basic theory of flexible body in ADAMS. Firstly composite hatches are converted to equivalent shell by using equal stiffness substitution principle, deriving the neutral file (MNF) of the hatch by classical module in ANSYS, and testing synchronization and accuracy of it under the condition of ideal rigid and flexible.

According to the paper entitled “Comparative Study of ZnO/Fe2O3 Nanocomposite Sensitized with Natural Pigments for Dye Sensitized Solar Cell”, this thesis examine and compares the efficiency of DSSC sensitized with natural dye extracted from Euphorbia amygdaloïdes and opuntia Ficus indica plant and pure ZnO, ZnO- Fe2O3 and pure Fe2O3 nanocomposite. The study starts by selecting natural dyes that they have good absorption spectra in the visible range using the UV-Vis spectrophotometer the selected natural dyes were Euphorbia amygdaloïdes and opuntia Ficus indica.

Information integration is an effective solution to support collaborations among various medical complexes in the regional healthcare environment. In this paper, an adaptive requirement-driven architecture for healthcare information integration based on service-oriented architecture is proposed in this study called “A Requirement-driven Approach for Information Integration in Regional Healthcare Environment”. By adding business process layer and service layer, high business agility has been achieved. The function of each layer is discussed and the requirement-driven operational mechanism of this architecture is studied. Based on the requirement pattern modeling method, a case-based reasoning based requirement retrieval algorithm is designed in the requirement presentation layer to achieve the adaptive architecture and enable the information integration platform to have self-improvement and self-development capability. The capability of this approach has been demonstrated through an empirical case study in one of the largest hospitals in China and the outcome reveals that healthcare services quality can be improved significantly by the seamless integration of heterogeneous information in the different information systems.

This study “Effectiveness Evaluation of the EWCCS based on the Hybrid Multiple Attribute Decision Making TOPSIS Algorithm” explains that when evaluating the effectiveness of the electronic warfare command and control system (EWCCS), some special performances cannot determine whether the system is good or not. And it is necessary to classify the performances into the qualitative ones and the quantitative ones. Based on the hybrid multiple attribute decision making theory, the qualitative performances are described by some fuzzy langue and expressed by the interval numbers.
Based on the new distance formula of the interval number, the hybrid multiple attribute decision making (HMADM) TOPSIS evaluation algorithm is proposed.

Based on the study “Carreau Model for Liquid Thin Film Flow of Dissipative Magnetic-Nanofluids over a Stretching Sheet”, in recent days, external magnetic fields are very effective to set the thermal and physical properties of magnetic-nanofluids and regulate the flow and heat transfer characteristics. The strength of the applied magnetic field affects the thermal conductivity of magnetic-nanofluids and makes it aeolotropic. With this incentive, they investigate the flow and heat transfer characteristics of electrically conducting liquid film flow of magnetic-nanofluids over a stretching sheet by considering the aligned magnetic field with space and temperature dependent heat source/sink, viscous dissipation and thermal radiation. For this study, they considered Fe$_3$O$_4$ and CoFe$_2$O$_4$ nanoparticles embedded in water. Numerical results are determined by adopting Runge-Kutta based shooting technique. Graphs are exhibited and explained for various parameters of interest. The influence of pertinent parameters on reduced Nusselt number, friction factor, flow and heat transfer is discussed with the assistance of graphs and tables. It is found that aligned magnetic field regulates the momentum boundary layer and heat transfer rate. It is also observed that increasing the volume fraction of nanoparticles effectively enhances the thermal conductivity of Fe$_3$O$_4$-water nanofluid when compared with CoFe$_2$O$_4$-water nanofluid.

The effectiveness of resources is the base for analyzing system safety or prognostics and health management system. This paper “Efficient Mining Maximal Trend Biclusters in Resource Effectiveness Matrix proposed” two efficient bicluster mining algorithms: CoCluster algorithm and CeCluster algorithm, which mine trend bicluster respectively in discrete and real-valued resource effectiveness matrices. First, both algorithms construct a sample weighted graph; second, they mine maximal trend bicluster using sample-growth method in above constructed graph. In order to improve the mining efficiency, multiple pruning strategies are adopted for mining trend biclusters without candidate maintenance. Meanwhile, CoCluster algorithm and CeCluster algorithm can not only mine resource patterns with effectiveness in the downtrend, but also mine those with effectiveness in the uptrend. To improve the scalability, both algorithms can also mine resource patterns without change of effectiveness.

Entropy measure is an important information measure of hesitant fuzzy sets. This article “Hesitant Fuzzy Multi-attribute Decision Making Method based on a New Entropy Measure” will construct a new entropy measure and then develop a new decision method for the multi-attribute decision making problem with attribute values expressed with hesitant fuzzy elements. Firstly, a new entropy measure of hesitant fuzzy sets is constructed, then the weights are obtained using the entropy weight method, and positive ideal solution and negative ideal solution are defined. Further, based on the conception of TOPSIS, the relative closeness degree is calculated to rank the alternatives. Finally, a practical example is examined to demonstrate the effectiveness and feasibility of the proposed method.

Paper “Anticancer Study of Wonogiri’s Curcuma Xanthorrhiza roxb Ethanol Fraction as Jamu by Flexible Docking Methods” explains that wonogiri’s Curcuma Xanthorrhiza roxb in Indonesia is famously consumed as traditional drinking called as Jamu. It contains active phytochemical compounds called as curcuminoids in its ethanol fraction. Curcuminoids are natural derivative compounds comprised by three major substances, such as curcumin, demetoxycurcumin and bisdemetoxycurcumin. Those of reported to have anticancer activity. Most of the cancer cells show such a rapid duplication that surely fast in growing and proliferating, both characteristics are driven by enzymes called as
Topoisomerase, more precisely, type II DNA topoisomerase. According to those of activity, curcuminoids are very potential to be investigated. Flexible docking methods, a kind of Bioinformatics study, is method that cheap, fast and easy enough to use. It has been widely used and strongly aimed to give prediction about such the potential compounds. Flexible docking between curcuminoids and active sites of type II DNA topoisomerase performed using Autodock vina reveals that curcuminoids have various interactions and bondings among active site areas Aspartic acid$^{479}$, Arginine$^{503}$, Glycine$^{778}$, Glutamine$^{778}$, Adenine$^{12}$, Guanine$^{13}$, Timine$^{6}$, Cytosine$^{8}$ and Metionine$^{782}$. Exposure of Gibbs free energy to curcuminoids docking study show the structure-dependent increase in binding value compared to standard etoposide. Gibbs free energy of curcumin is -9.2 kcalmol$^{-1}$ noted as the highest followed by -8.6 kcalmol$^{-1}$ of demetoxycurcumin and -8.2 kcalmol$^{-1}$ of bisdemetoxycurcumin for the second and third respectively. ADME/Tox assessment performed using ACDLab software results that curcumin shows a number of problems in its bioavailability however curcuminoids are relatively safe to consume generally. These data suggest that curcuminoids predicted to have potential as anticancer activity. Furthermore, Wonogiri’s curcuminoids contained in Jamu as traditional drinking formulas predicted safe to consume bioinformatically.

The paper entitled “Information Visualization Analysis of Academic Development of CSSCI Papers on Intercultural Communication from 2006-2015” makes a detailed information visualization analysis of the intercultural communication research papers downloaded from 2006 to 2015 in the CSSCI (Chinese Social Sciences Citation Index) by using the most famous information visualization analysis software CiteSpace V, which aims to clarify the evolutionary trajectory of the domestic intercultural communication research, to describe the research trends, characteristics, hot spots, the total cited literature and so on, and to reveal the dynamic development of intercultural communication academic research.

The paper “Wireless Sensor Network Communication Using Electromagnetic Waves at Radio Frequency 433 MHz” says that wireless sensor network has the advantage of being low-cost, easily deployed and of good mobility. Wireless underground sensor network (WUSN) consists of wireless devices that operate below the ground surface. These devices are buried completely under dense soil, thus electromagnetic wave transmits only through soil medium. In this paper, the application research of the wireless underground sensor network is described. Experimental measurements of the signal strength and error rate are presented at the frequency of 433MHz, which show a good agreement with the theoretical studies.

Autonomous vehicles are driven by a computer; therefore they can drop passengers off at any location and then continue to a remote parking lot. In the paper “Remote Parking for Autonomous Vehicles” they explore the benefits of this remote self-parking and how the use of autonomous vehicles will change the land uses in many metropolitan areas all over the world. As a paradigm, they explore the case of the state of Israel. Like many other countries, the parking infrastructure in Israel is insufficient and occupies pricey lands in many locations; therefore remote self-parking can be of great advantage.

According to the paper “Applying a Hybrid Approach Based on Analytic Hierarchy Process and Artificial Neural Network to Upholstered Furniture Design”, upholstered furniture evaluation is a complex and multi solution problem. Multi objective evaluation research can effectively improve the design efficiency and quality of upholstered furniture. The evaluation of each individual design candidate in terms of its ability to meet the demands of all factors should be taken into consideration and is a crucial step within the conceptual and product design stage. The evaluation indexes are established according
to the principle of upholstered furniture design. Consequently, this paper proposes a method which enables upholstered furniture product evaluation by means of analytic hierarchy process (AHP) and back propagation neural network (BP neural network) method of artificial neural network. The upholstered furniture indexes and the indexes weights are given by AHP, the BP neural network model of upholstered furniture are established by using the training sample data obtained from weight values of AHP. 30 upholstered furniture design proposals are chosen as the subject of this research, and 90 rating data are obtained by expert investigation method. 60 of them are used as training sample data and 30 of them are used as test sample data in BP neural network by MATLAB software program. Eventually, BP artificial neural network model for upholstered furniture evaluation was established by sample data training and testing in neural network with MATLAB, which can be used for simulation of upholstered furniture design quality and decision-making.

Based on the paper entitled “FPGA Architecture for Real-time Depth Estimation System”, depth estimation has been widely concerned. It estimates the depth map from a single-view image or multi-view images, which is an essential step for 2D-to-3D conversion. However, most of the depth estimation algorithms suffer from high computational complexity and high memory cost. This paper presents an overall FPGA architecture for real-time depth estimation system based on an improved hardware-friendly algorithm. In this architecture, two transposition modules, row-to-column and column-to-row transposition modules, are designed to rotate the images so as to meet the requirements of the algorithm. These modules can also be used for any other situations that need to rotate the image during hardware processing. In order to reduce the computational complexity, equations with power and division operations are substituted by the approximate equations with addition and subtraction operations. In addition, hierarchical pipelining is used to reduce the memory cost as well as improve the operating frequency, and the external memory is used to reduce the internal memory cost.

In the paper “Design PD Functional Based FPGA Controller for FOD Systems”, robust controller design for nonlinear systems with unknown dynamics (delay system) the impact of intense activity between connections can be considered as a challenge in this research. In order to reduce delays in the system resistant and the non-linear technique called variable structure control method is used. Variable structure control method is a type of non-linear controllers, although variable structure control technique, control is stable, with high reliability in environments that respond favorably almost unknown but has substantial limitations fluctuations (vibrations) high-frequency is. To fix this problem, saturated nonlinear function method was used. Many nonlinear controllers need to chip control with low volume, functionality, accuracy, and speed are high. Programmable integrated circuits are capable of solving these challenges. Programmable integrated circuits to design nonlinear variable structure controller optimized linear controller on a single chip is used. Having designed to speed up the response of the SPARTAN-3E in Xilinx programmable integrated circuit used. This technique is designed to control the programmable integrated circuit SPARTAN-3E, computational speed controller is 30.2 ns and a maximum frequency of 63.7 MHZ circuit.

The paper “Target Motion Sequence Detection Using Hidden Markov Models” assesses the application of Hidden Markov Models (HMMs) in obtaining the most likely sequence of distributions one target chooses in the problem of a geometric, transversal approach to optimizing the probability of tracking maneuvering targets. Several factors that might affect the performance of the HMMs are considered in this paper. These include the number of time intervals, the overlapping of distributions, the symmetry of distributions, the number of distributions per time interval, the numbers of the types of distribution the
target chooses from, and the dependence of distributions between time intervals. It is shown that the effects of these factors on the performance of HMMs by comparing the outcomes of problems whose settings are the same against the factor considered in that instance.

The paper “Ant Colony Foraging Behavior Modeling, Simulation and Application Based on the Evolution of Rules” introduced the method of modeling and simulation based on the evolution of rules, modeling and simulating on ants foraging behavior, through the establishment of ants foraging rules, sowing pheromones rules, obstacles avoidance rules and other valid behavior rules, and the adaptive processing of parameters in model strengthened the intelligence and quickness in ant searching route, through comparing with the existing classical literatures’ simulations, confirmed the effectiveness of the model. To verify the suitability and application value of ants foraging behavior model, this paper also put the improved model in use of the mobile robot local path planning, the simulation demonstrated that the ants foraging behavior model can quickly determine the optimal path in complex environment.

The paper “Nonlinear Analysis of Phase Sensitive Demodulation Circuit in MEMS Gyroscopes” will study on the nonlinear of phase sensitive demodulation in sense-mode of micro-gyroscope, analysis the reason of nonlinear, and propose solutions to reduce the nonlinear interface by circuit design.

In the paper “Synthesis and Structural Studies of LiMn2-x-yZnxMgyO4 (x = y = 0.0, 0.02, 0.04) Spinel As Cathode Materials For Lithium-Ion Batteries”, the Spinel structure LiZnxMgyMn2-x-yO4 (x = y = 0, 0.02, 0.04) were being prepared by the sol-gel method. The physical properties of the synthesized materials were discussed in the structural (XRD, SEM and FT-IR) measurements. The X-ray diffraction (XRD) patterns possessed the spinel structure of the cubic space group (Fd3m) with no evidence of any impurities. Scanning electron microscopy (SEM) showed the phase morphological features and particle size distribution was in the range of 200 to 250 nm. The FT-IR spectroscopy revealed the spinel structure, built of MnO6 octahedra and LiO6 tetrahedra.

For multiple unmanned aerial vehicles (multi-UAV) task allocation, a new method is given in this paper entitled “Multiple Unmanned Aerial Vehicles Cooperative Combat Task Allocation Method Based on Receding Horizon Control”. Firstly, the capability function of UAV is established, and the calculation method of multi-UAV cooperative combat position is presented through the capability function of Jacobian matrix. The UAV’s value income index function, damage index function, voyage index function and multi-UAV cooperative task allocation model are established further. The maneuvering decision making problem is modeled as the optimal control problem by using Receding Horizon Control (RHC). Then the optimal decision-making method of multi-UAV cooperative combat task allocation is gotten by the discretization of time and space in the whole process of decision-making and the calculation of the optimal maneuver strategy piecewise.

According to the paper “Identifying Deceptive Opinion Spam using Aspect-based Emotions and Human Behavior Modeling”, online product reviews have become the major source of information for the end users to make purchasing decisions. Companies/individuals often hire people for writing fake reviews to increase the sale of their products. These individuals are known as opinion spammers and their activities are known as opinion spamming. Manually it is difficult for a human being to detect these deceptive reviews. Features play a major role to build effective deceptive reviews detection classifiers. they have observed human behavior through reviews, blogs datasets,
and transferred these observations into features. Towards the end, they have built automated deceptive reviews classifiers using document level and aspect level domain independent features.

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