Foreword and Editorial

International Journal of Future Generation Communication and Networking

We are very happy to publish this issue of an International Journal of Future Generation Communication and Networking by Science and Engineering Research Support soCiety.

This issue contains 21 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 “The Path Transmission Mechanism of Wireless Sensor Network Research” proposed a heuristic algorithm to solve MSRDC problem, describes in detail the main idea of the algorithm, algorithm design and implementation of the algorithm. MSRDC simulation results indicate that the algorithm can effectively select the gathering node, in order to reduce network transmission hop count as much as possible, so that they can save the network energy consumption and prolong network lifetime.

In the paper “INFLE: An Improved Neighbor-Based Fuzzy Logic Event Detecting Algorithm for Wireless Sensor Networks”, propose an improved NFLE (INFLE) which can dramatically increase the precision of fire detection. In NFLE, the final fire confidence of one node is partly determined by the average readings of its neighbors in fuzzy logic system, which may lead to inaccurate fire detection when event occurred in an area that covers only part of its neighbors. In the proposed INFLE, it selects some of neighbors, by specific rules, to determine node’s final state.

The paper “Performance Analysis of Flooding and SPIN in Wireless Sensor Networks” introduced Flooding as a simple routing protocol which is widely used for data transmission. However it suffers from many disadvantages like implosion, overlapping and resource blindness. In order to overcome the above disadvantages, SPIN protocol is used. It is data centric and uses meta-data negotiation before transmitting the actual data. Hence it prevents redundant data transmission to a great extent.

In the paper “Optimizing Data-Accessing Energy Consumption for Workflow Applications in Clouds”, present a novel energy-efficient policy, which is aiming at reducing the data-accessing energy consumption of workflow applications that executed on cloud environments. The proposed policy uses a general energy model to describe the energy consumption of any given workflow. By this application-oriented energy model, a two-phase resource deploying algorithm is implemented, which is capable of generating task scheduling schemes with minimal data-accessing energy consumption.

Paper “Co-scheduling Deadline-Sensitive Applications in Large-scale Grid Systems” proposed a novel approach to evaluate the deadline-guarantee of co-allocation schemes that obtained from conventional co-allocation policies. Based on this approach, a hybrid-policy co-allocation model is also proposed to address the issue of deadline-constrained resource co-allocation in grid environments. The proposed model integrates multiple co-allocation
policies to generate different co-allocation schemes, and selects the one with optimal deadl

e-line-guarantee for grid applications. By this way, the hybrid-policy model combines the me

erits of different policies, and overcomes the shortcomings of those policies. Extensive simula
tions are conducted to verify the effectiveness and the performance of the proposed model in
terms of deadline-miss rate.

In the paper “An Algorithm for Spectrum Sensing in Cognitive Radio under Noise Uncer
tainty”, proposed an adaptive threshold algorithm scheme as a solution to changing P_d w

hen noise floor keep on changing. The proposed scheme tracks the dynamically changing en
vironment in terms of SNR and set threshold accordingly. Analytical analysis and result ob

gained shows that a constant desired P_d can be achieved even in changing environment u

sing proposed scheme.

The paper “Energy Efficient Based Maximal Lifetime Routing in Wireless Sensor Networks”
propose an Energy-efficient based Maximal Lifetime Routing Algorithm to prolong lifetime
(EMLRA), which is able to dramatically prolong network lifetime while effectively reducing en

ergy consumption. Through an analytical study, it provides guidance on how to choose pa

rameters in the scheme and demonstrate that the scheme is efficient in both network li

feime and energy consumption. Simulation results show that, with the proposed Energy-

efficient based Maximal Lifetime Routing Algorithm in WSN energy consumption, network li

feime, energy consumption balance can be improved in most of cases.

In the paper “The Optimal Coverage and its Features of the Communication Nodes in Ad Hoc
Network” get some important changing relationships about the factors of the node’s distance d
and the communication radius r and the coverage area s, and briefly analyze the least num
ber of the communication channels that the other nodes can obtain in the network, and s
pecially discuss the situations of the optimal complete-coverage and its Features by using th

e geometry and optimization method to analyze the coverage formed by two and three intersected communication nodes in the Ad Hoc network.

The paper “PSO based Cross Layer Optimization for Primary User selection in Cognitive Radios” proposed cross layer optimization where different operating parameters such as transmis

sion power, packet length, bandwidth etc. across the OSI layers of a device are optimized. In this paper Particle Swarm Optimization (PSO) algorithm is proposed to optimize different operating parame

ters with the objective to optimize throughput, power consumption, interference, Bit Error Rate and spectral efficiency for a set of PUs across the physical, network and Media Access Control (MAC) layer in OSI model. The fitness values of these objective functions in different modes and channels are investigated using MATLAB and the results shows that PSO is 70% faster than the Genetic Algorithm in terms of convergenc

rate. Finally paper proposes that PSO based algorithm is an efficient, reliable and fast technique for primary user selection in cognitive radios.

In the paper “A Downlink Max-SINR Precoding for Massive MIMO System” investigated and improved the downlink precoding algorithm on Max-SINR criterion to acquire the max

imal array gain and mitigate the impact of pilot contamination for Massive MIMO system. Th

e objective function assured to maximize the utilization rate of the transmission power un

der the condition that SINR is not lower than the desired threshold. The Lagrangian function was deduced according to the objective function. Further SINR computation counted
the channel estimation error caused by pilot contamination and its computational complexity was reduced by utilizing the character of Massive MIMO channel.

The paper “Constructing Digital Library Information Platform Based on Cloud Computing” propose a reference architecture of a cloud based digital library information platform, and then focus on the resource allocation component. In the experiment, it evaluates the efficiency of the resource allocation algorithm.

In the paper “Performance Comparison of AODV and CAODV Routing Protocol using Cognitive Radios” implemented a Cognitive Ad hoc On demand Distance Vector (CAODV) routing protocol in MATLAB-09. Moreover, this paper also shows the advantage of CAODV over the standard protocol AODV.

The paper “An Effective Quality of Experience Measurement and Calculation Method for IPTV Service” focuses on the topics of Quality of Experience which is essentially focused on business users feeling. The purpose of QoE is to realize the user-centered management. QoE is how to come up from the Angle of the user service analyze network service. QoE regards the network service as one unity and considers the various aspects of affecting the network service performance. However by comparison, QoS only pays attention to the network performance which means QoS is one subset of QoE. At present, the difficulty and key point of the study about QoE is how to quickly and effectively compute the indexes which influence QoE. In this paper, in order to solve this problem, it proposed a solution to compute the indexes which influence the QoE result by using the AHP algorithm.

In the paper “Strong Tracking Unscented Kalman Filtering Algorithm Based-on Satellite Attitude Determination System” proposes the Strong Tracking Square-Root Unscented Kalman Filter (UKF)-based satellite attitude determination algorithm combined with strong tracking filter (STF) theory. QR decomposition and Cholesky decomposition are introduced in this paper, which improves the stability of filter. In addition, by introduced adaptive fading factor, the prediction error covariance matrix can be adjusted, thus it can guarantee the strong tracking performance of the proposed algorithm.

The paper “Ultra-Broadband Optical Transmission using Bi/Er Codoped Glass Fiber: Key Design Issue and a Survey” provides a survey of the current researches on Bi/Er codoped glass fiber and draws their link to earlier literature on Bi-doped fiber and Er-doped fiber. Also, it present an overview on the key issues that arises during the design of a Bi/Er codoped fiber. Finally, it is intended for a wide range of readers as it covers the topics from basics to advanced aspects.

In the paper “Dynamic Double Energy Thresholds Detection for Cooperative Spectrum Sensing in Cognitive Radio” suggests a cooperative spectrum sensing using dynamic double thresholds energy detection and adaptive grid search to obtain the highest probability detection. The proposed double thresholds are adaptive to noise fluctuation. A new fusion method combined of weighting and voting is used in cooperative sensing. Further, in order to obtain the best sensing performance, it firstly use adaptive grid search to find the optimal double thresholds.

In the paper “Measuring Semantic Similarity of Word Pairs Using Path and Information Content”, presents a new metric for measuring word sense similarity using path and
information content. Different from previous works, the new metric not only reflects the semantic density information, but also reflects the path information. It is evaluated on the dataset provided by Rubenstein and Goodenough.

The paper “Performance Evaluation of the Joint Detection with Channel Estimation Error” analyzes the effect of channel estimation error on joint detection and evaluate the performance of TD-SCDMA systems with channel estimation error.

In the paper “A Method of Path Feasibility Judgment Based on Symbolic Execution and Range Analysis” introduces a simple method of path feasibility judgment based on symbolic execution and extended interval arithmetic, and the checking result is sound. If the result tells that one path is feasible or infeasible, it is true with the fact. Of course, limited by the approximation of interval arithmetic, the method is effective for the functions with weakly relevant input, and there may exist quite many paths identified uncertain.

The paper “An Adjustable Sleep Scheduling Framework for WSN” presents an adjustable sleep scheduling framework for a variety of application in wireless sensor networks (WSNs) so that the lifetime of the network could be prolonged. Varies of typical applications in WSNs are analyzed to identify the same characteristics with which unified interfaces can be designed for all applications, and to identify different characteristics for which interfaces are reserved. This framework can meet the needs of varies applications by simple configuration and adjust itself according to real-time aspects. It can also avoid wasteful duplication, improve work efficiency and provide a good solution to the issue of application independent of sleep scheduling in WSNs.

In “An Efficient Synchronized Aggregate Signature Scheme From Standard RSA Assumption” proposed an efficient synchronized aggregate signature scheme from the standard RSA assumption. The construction is based on the Hohenburger and Waters RSA signature (Crypto 09). This scheme can be proved existentially unforgeable against adaptive chosen-message attacks without random oracles.

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Editor of the June Issue on
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