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 11 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.

In the paper “A Novel Iterative Clipping and Filtering Technique for PAPR Reduction of OFDM Signals: System Using DCT/IDCT Transform”, the drawbacks of high peak to average power ratio (PAPR) can outweigh all the potential benefits of Orthogonal Frequency Division Multiplexing (OFDM) signals. A sophisticated PAPR reduction technique, named Iterative Clipping and filtering (ICF) with DCT/IDCT transformation, is proposed for OFDM system.

In the paper “Enhanced Availability Rate and Load Balance in Emerging Heterogeneous Wireless Network Using Proactive Group Vertical Handover Algorithm”, discussions are focused with Future Heterogeneous Network (HetNet) will foster interoperability to achieve seamless multimedia services. To exploit the ubiquitous diversity across HetNet, Mobile Nodes (MN) will prefer to perform Vertical Handover (VHO) for better guaranteed Quality of Experience (QoE) and optimal resource utilization. To perform VHO, the radio frequency part of the emerging wireless standards needs to accurately estimate the channel for network selection. Further in HetNet, MNs may perform VHO in group (in bus/ train) where HetNet utility increases abruptly due to simultaneous VHO requests and severely degrades the HetNet performance. Therefore, this paper proposes a proactive group VHO model, whose network discovery is based on error vector magnitude (EVM) measurement which can be mobile or network controlled for optimal network selection (new attachment node).

The paper “Dynamically Self-adjusting Cache Replacement Algorithm” deals with the concept of caching that is a fundamental feature in modern computing architectures and, has no doubt, found wide applications in diverse areas. Performance evaluation of systems is functionally related to how caching is implemented on a given computing platform, a metric influenced by the cache replacement policy. This paper describes an online learning-induced, self-adjusting cache management strategy with low overhead and scan-resistant characteristics that outperforms the LRU replacement algorithm using adaptation to balance between workload frequency and recency patterns.

In the paper “An Adaptive Transmission Scheme for Wireless Sensor Networks”, Authors proposes a new adaptive transmission scheme, which adaptively adjusts transmission mode between direct communication and cooperative communication for node pairs to achieve energy efficiency in wireless sensor networks. The scheme is implemented by a simple yet effective cross-layer design between the network and MAC layers.
The paper “The SVM-Based Feature Reduction in Vocal Fold Pathology Diagnosis” present an initial study of feature extraction and feature reduction in the task of vocal fold pathology diagnosis. A new type of feature vector, based on wavelet packet decomposition and Mel-Frequency-Cepstral-Coefficients (MFCCs), is proposed. Also a new SVM-Based method for feature reduction stage is proposed and compared with conventional methods such as Principal Component Analysis (PCA). Support vector machine is used as a classifier for evaluating the performance of the proposed method.

Paper “BER Analysis of Semi-blind Channel Estimation in MIMO Systems” analyzes the effect of imperfect channel estimation error on MIMO systems’ BER performance. By utilizing whitening-rotation (WR) algorithm for recovering the detected signal at the receiver and calculating channel coefficients, it can be proved that semi-blind channel estimation obtains better results in comparison with blind ones. In addition, symbol error rate (SER) of MIMO systems in such estimation schemes is also analyzed.

In the paper “QoS Routing Algorithm Applying Multi-Agent System for LEO Satellite Network” Authors sees that Satellite network is the essential part of the future generation of hybrid communication networks. Considering the surging demands for multimedia traffic across the globe, the dynamic time-varying topology of low earth orbit (LEO) satellite network and the flaws of existing QoS (Quality of Service) routing algorithms, a novel QoS routing algorithm applying multi-agent system (MAQR) for LEO satellite network is proposed in this paper. The algorithm design three types of mobile agents: node management agent (NMA), active perception agent (APA) and executive agent (EA). NMA adaptively perceives external environment and deals with traffic request and controls routing. APA is responsible for collecting information of non-local satellite nodes and links. EA is in charge of path maintenance and update. MAQR algorithm introduces link duration into a cost function and then minimizes the cost function to find optimum paths that simultaneously satisfy delay and bandwidth constrains. Besides, when current QoS path is deteriorated, new QoS path can be discovered without rerouting.

The paper “A Density-based Energy-efficient Clustering Algorithm for Wireless Sensor Networks” proposes a Density-based Energy-efficient Clustering Algorithm (DECA). In DECA, the density of each node is defined and regarded it as an important evaluation metric. Together with nodes’ residual energy under consideration, each cluster head is selected based on the density of nodes. An intra-cluster algorithm is designed as well as a multi-hop inter-cluster routing algorithm. Moreover, the optimal number of clusters is discussed.

The Authors of “A Cross-layer QoS Scheme of Non-real-time Service in WiMAX” proposed a technique for channel condition coupled with a RR based scheduling algorithm to preserve QoS and fairness in downlink traffic delivery of non-real-time service, even if the system is in the situation of large number of connections. In this paper, a signal-aware CAC with a RR based scheduling algorithm is proposed for nrtPS of downlink connections in WiMAX. The proposed scheme provides efficient assignation for the BS by dynamically adjusting the allocated resource to SSs according to their own SNR.

Paper “Toward Conceptual Specification of Communication Protocols” deals with the Communication Protocols that are specified by using either formal or graphical notations. For this purpose, Specification and Description Language (SDL) is a formal language used extensively in telecommunication for development of software and hardware. Its
diagrammatic version with complementary Message Sequence Chart (MSC) diagrams provides a description of system communication in the form of message flows. Still, the resultant diagrams are fragmented and lack continuity in depicting the succession of events. This paper proposes a model that can serve as a base for protocol specification. The aim is to introduce a conceptual and complete description of basic streams of flow among entities in order to identify rules of data transfer.

Paper “An Intelligent Efficient Secure Routing Protocol for MANET” proposes an intelligent protocol that takes care of both selfishness and maliciousness by evaluating the trust dynamically. The protocol is able to adjust the trust level requirement as per the demand of the situation and can work in various levels of insecure environments. With the help of exhaustive simulations, the performance of this protocol has been demonstrated and compared with the normal AODV protocol in standard lab environment.

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