

## Special Issue on Design, Authentication and Evaluation of Computer Network

Communication protocols, authentication, performance evaluation, traffic control of computer network presents a challenge for network engineer. It is important to be able to simulate the behavior of a computer network off-line such that the design which succeeds in achieving the optimal performance can be implemented in real-life systems. Many software simulation tools were introduced in the past to achieve this goal. Success and failure were reported. In this special issue of the IAENG journal, we report recent results which effectively solve variety of problem associated with the network design problem. T. Huang and A. Chung provided a study on the design for testability (DFT) to overcome the increasing complexity distributed systems testing. They demonstrated the effectiveness of NIO sequence application on the improvement of protocol testability. Recently, the popularity of 802.11-based Wireless LANs (WLAN) keeps growing in variety of applications. It is worth to mention that the risk of security attacks is also growing. The new WLAN security standard, 802.11i, addresses most issues on user authentication and data encryption; however, it does not protect WLANs against DoS attacks. C. Liu and J. Yu in their paper presented a solution to detect and resolve authentication request flooding (AuthRF) and association request flooding (AssRF). There solution was tested and validated by empirical results. One of the famous applications for wireless LAN is its use for E-Learning application. This is why authors, S. Najim, I. El Emary, and S. Saied, explored in their work an evaluation study of an IEEE 802.11b wireless LAN (WLAN) applied in E-learning classroom. They were able to simulate 50 clients with a modest E-learning and Web browsing activities using the OPNET IT Guru 9.1. The Selection of appropriate traffic of computer network system presents a complex optimization problem for network engineer. Well know Artificial Intelligence technique which have been successfully used to solve complex optimization problem is the Genetic Algorithms (GAs). A. Sheta, H. Heyasat, H. Turabieh and M. Salama, explored the use of GAs to fine the optimal traffic of a computer network with fixed topology such that they can minimize the network delay, increase network reliability and reduce design cost. Numbers of constraints were taken in consideration to achieve these goals. Routing in wireless sensor networks is a demanding task. This demand has led to a number of routing protocols which efficiently utilize the limited resources available at the sensor nodes. R Vidhyapriya and P T Vanathi presented a new protocol which helps to provide a reliable transmission environment with low energy consumption, by efficiently utilizing the energy availability and the received signal strength of the nodes to identify multiple routes to the destination.

### Special Issue Guest Editors:

Assoc. Prof. Dr. M. M. El Emary  
Assoc. Prof. Dr. Alaa F. Sheta

doctor\_ebrahim@yahoo.com  
sheta@bau.edu.jo

### Editorial Members:

M. Sarfraz	<a href="mailto:sarfraz@ccse.kfupm.edu.sa">sarfraz@ccse.kfupm.edu.sa</a>
A. Jaoua	<a href="mailto:jaoua@qu.edu.qa">jaoua@qu.edu.qa</a>
A. Hasnah	<a href="mailto:hasnah@qu.edu.qa">hasnah@qu.edu.qa</a>
J. Fiaidhi	<a href="mailto:jinan.fiaidhi@lakeheadu.ca">jinan.fiaidhi@lakeheadu.ca</a>
S. Mohammed	<a href="mailto:mohammed@lakeheadu.ca">mohammed@lakeheadu.ca</a>

**Papers:**

**Communication Protocols Testability Improvement by Narrow Input/Output (NIO) Sequences**

*Tao Huang and Anthony Chung*

*School of Computer Science, Telecommunications and Information Systems*

*DePaul University*

*Chicago, Illinois, U.S.A.*

*thuang@condor.depaul.edu, chung@cs.depaul.edu*

**A Solution to WLAN Authentication and Association DoS Attacks**

*CHIBIAO LIU AND JAMES YU*

*School of Computer Science, Telecommunications, and Information Systems*

*DePaul University*

*{cliul, jyu}@cs.depaul.edu*

**Performance Evaluation of Wireless IEEE 802.11b used for E-Learning Classroom Network**

*Salam A. Najim, Ibrahiem M. M. El Emary, and Samir M. Saied*

*Faculty of Engineering, Al Ahliyya Amman University*

*Amman, Jordan*

*E-mail: drsalamadil@yahoo.com*

*doctor\_ebrahim@yahoo.com,*

*samir\_m\_said@hotmail.com*

**Selection of Appropriate Traffic of Computer Network with Fixed Topology Using GAs**

*Alaa Sheta*

*Mohamed Salama*

*Hamza Turabieh*

*Haneen Heyasat*

*Al-Balqa Applied University*

*Salt, Jorda*

[sheta@bau.edu.jo](mailto:sheta@bau.edu.jo)

**Energy Efficient Adaptive Multipath Routing for Wireless Sensor Networks**

*R Vidhyapriya*

*P T Vanathi*