

JOURNAL OF TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY

Preface

This issue of the *Journal of Telecommunications and Information Technology* contains thirteen papers that deal with diverse problems of network security, or various issues related to wire and wireless communication networks including wireless sensor networks.

The first two papers are devoted to intrusion detection in computer networks. Damian Jankowski and Marek Amanowicz in the paper *Intrusion Detection in Software Defined Networks with Self-organized Maps* consider the new opportunities enabled by the Software Defined Network (SDN) architecture to implement security mechanisms in terms of unauthorized activities detection. They describe a novel approach to threat detection based on the machine learning integrated with the SDN controller. The movement-assisted threat detection system using mobility to enhance a global threat assessment in networks created by resource-limited things is presented in the paper *Intrusion Detection in Heterogeneous Networks of Resource-Limited Things*. Adam Kozakiewicz *et al.*, describe the architecture of the threat monitoring system for a wireless sensor network that provides a separate physical secure channel to deliver collected information.

Mariusz Dzwonkowski and Roman Rykaczewski in the paper *Quaternion Feistel Cipher with an Infinite Key Space Based on Quaternion Julia Sets* concentrate on the quaternion encryption. The authors claim that the application of modular quaternion to perform rotations of data sequences in 3D space to Feistel Cipher can bring an efficient encryption scheme. The proposed encryption algorithm is described and compared with the AES method.

The next three papers deal with secure IP communication provision for the power system management. The architecture and functionality of the cyber security system for a power grid control are presented by Jacek Jarmakiewicz *et al.*, in the paper *Evaluation of the Cyber Security Provision System for Critical Infrastructure*. The results of the system verification and validation in a testbed network are presented and discussed. Przemysław Malec *et al.*, in their paper *Detecting Security Violations Based on Multilayered Event Log Processing* start with premise that correlating data from multiple event log sources increase the accuracy of threat detection. The authors propose the multilayered event log analysis approach for managing and handling security incidents. Kamil Kołtyś and Robert Gajewski in the paper *SHaPe: A HoneyPot for Electric Power Substation* describe the concept, architecture,

and implementation of the SCADA (Supervisory Control and Data Acquisition) honeypot supporting the IEC 61850 standard. The presented system is open source software publicly available under GNU GPL.

Kazumasa Oida in the paper *Uniqueness and Reproducibility of Traffic Signatures* considers the feasibility of applying a traffic signature to the user machine identification. The author describes the novel approach with the signature calculated from HTTP-based video stream transmitted by the authentication server, and evaluates his proposal through numerous experiments.

The problem of limitations of a mobile cloud network and possible fault events at clouds are discussed by Jordi Mongay Batalla *et al.*, in the paper *On Providing Cloud-awareness to Client's DASH Application by Using DASH over HTTP/2*. The concept and implementation of the end-to-end framework for cloud congestion identification for DASH-capable video application are presented. The performance of the system for cloud-aware and its applicability to real clouds are discussed.

The applicability of the burst ratio parameter to multi-channel scenarios in transmission networks is discussed in the paper *Analysis of Burst Ratio in Concatenated Channels*. To confirm and demonstrate the validity of the burst ratio analysis Jakub Rachwalski and Zdzisław Papir present the results of numerous simulation experiments performed with NS2 network simulator.

The issue of coexistence of DVB-T and LTE communication systems operating in contiguous UHF frequency bands is raised in the paper *Measured Interference of LTE Uplink Signals on DVB-T Channels*. Massimo Celidonio *et al.*, survey and investigate the potential LTE influence on a DVB-T reception. The performance parameters that should be considered for assessing the corresponding interfering effects, i.e. protection ratio and protection distance parameters are under consideration. The numerous measurements carried out at the laboratory are analyzed.

The following two papers deal with various issues related to sensing systems. The paper *The Integration, Analysis and Visualization of Sensor Data from Dispersed Wireless Sensor Network Systems using the SWE Framework* is concentrated on integration and interoperability of measurements gathered by various sensing devices. Yong Jin Lee *et al.*, describe the extensions to the SWE (Sensor Web Enablement) framework to integrate disparate and disperse wireless sensor networks and to support standardized access to sensor data. Furthermore, the proposed software system introduces web-based data visualization and provides statistical analysis services. The next issue considered is the detection of location of the radiation in space to localize given data source. Youssef Khmou *et al.*, in the paper *Lorentzian Operator for Angular Source Localization with Large Array* propose a novel high resolution algorithm utilizing the Lorentzian function for Direction of Arrival (DoA) of narrowband and far field punctual estimation. The profitability of application of this algorithm is demonstrated through simulation study.

The last paper is concerned with maintenance of lead-acid batteries to achieve a high reliability of telecommunication services. Ryszard Kobus *et al.*, in the paper *Maintenance of Lead-acid Batteries Used in Telecommunications Systems* survey the primary types of batteries used in telecommunication systems and describe the techniques for monitoring and measuring their current capacity. The main attention is focused on an universal module for charging/discharging batteries (TBA-A) that was developed by the authors. They claim that the TBA-A module integrated with a control unit TBA-W creates a novel ATE device that can be successfully used in power systems for remote telecommunication facilities.

We wish our Readers an interesting reading time.

Ewa Niewiadomska-Szynkiewicz
Guest Editor