

Foreword and Editorial

International Journal of Smart Home

We are very happy to publish this issue of an International Journal of Smart Home by Science and Engineering Research Support soCietY.

This issue contains 12 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 “Creating Personal Notes in Electronic Textbooks on Touch-based Tablet PC” states that tablets and smart devices became a big surprise in education field over past years. Schools that brought tablets into the classroom showed that the tablets can be a great learning device. Tablet and mobile devices have strong power to change education paradigm. Specifically, many people believe that electronic textbooks will take the place of the next paradigm shift in education. However, just providing students with smart devices and electronic textbooks is not sufficient. Students are supposed to write and communicate with each other in mobile education, not just to read textbooks. Moreover, students want to pile their own knowledge as their private assets. In this paper, Authors propose a user interface that helps users to create a note in electronic textbooks along with user's touch gestures and to organize their own personal notebook. They focus on solving inaccuracy of touch gesture to create a note on a target object on touch screen device.

Paper “Development of an Embedded Smart Home Management Scheme” describes the development of an embedded smart home management scheme over the Ethernet network. The platform of the smart home management system is built using bespoke embedded system design. An embedded control module developed by exploiting the Web Services mechanism, consist of 15 monitoring channels based on XML SOAP standards. Each channel is integrated to dedicated smart home management scheme and performs bi-directional real-time control. In the event of server unavailability, a mobile based communication module using GSM has been deployed as an alternate management mechanism.

The paper “On the Self-Healing Mechanism in Smart Grid Networks” proposes a self-healing wireless network mechanism to provide efficient servicing in Smart Grid network. The nature of Smart Grid environment requires high level of wireless networking reliability and stability for providing accurate power related information to users. To provide these requirements in the wireless networking perspective, the proposed self-healing mechanism uses automated services to acquire various wireless environment parameters and use them to adapt and tune the network. Parameters such as MAC retransmission count, Bit Error Ratio (BER), and Received Signal Strength (RSS) are used and modified to detect various types of problems in the network. Then based on these detections, the network adaptively enforces its transmission policies to heal from these problems. The self-healing mechanism eventually helps in increasing packet delivery and real-time properties of the wireless network, providing higher reliability for smart grid services.

The paper “Performance Analysis of Web-browsing Speed in Smart Mobile Devices” discusses that the rapid growth of telecommunication technology has led to the development of many smart devices. In particular, the smartphone market has been growing rapidly following the development of third-generation telecommunication technology. As a result, most people are expected to use a smartphone within a few years. Furthermore, the market for smart devices such as tablets and smart TVs are growing rapidly. Therefore, most people are expected to own various smart devices within a few years. However, current Web services are focused on a desktop PC platform, which can be problematic for smart devices. In this paper, Authors analyze the performance of Web browsing speed in smart mobile devices with the goal of providing Web services customized for smart devices.

In the paper “A Multilevel Home Security System (MHSS)”, a multilevel home security system (MHSS) has been designed, developed, tested and validated. MHSS is basically a multilevel security system which consists of different sensor nodes as the input elements while the output elements react to the signal received from the input elements. The sensor nodes consist of a thief alarm, presence detecting circuit and the break-in camera. A UART is applied as the communication tool between the hardware and the computer. A graphic user interface (GUI) is developed and configured which enables the function of capturing images and sending emails. The captured images are delivered to the house owners and the police forces. The task is performed in order to prevent the thieves’ invasion.

Paper “Design and Implementation of a Wearable ECG System” design and implement a wearable ECG (electrocardiogram) system with smartphones for real-time monitoring, self-diagnosis, and remote-diagnosis for chronic heart disease patients before sudden outbreaks. The smart shirt with ECG can be worn by inpatients or outpatients and monitored in real-time. Healthcare professionals can access patients' data wirelessly in real time with their smartphones. This system can be useful especially for senior citizens who live alone or have a disability. Therefore, this system can be utilized for remote medical systems to assist the elderly patients, for self-testing diagnostics, or for physicians to diagnose diseases of the circulatory system.

In the paper “Non-root-based Hybrid Wireless Mesh Protocol for Wireless Mesh Networks”, Authors defines wireless mesh networks (WMNs) as wireless networks that are composed of mesh routers and mesh clients. Mesh routers have minimal mobility and form the backbone of WMNs. IEEE 802.11s-based WMNs have a default routing protocol, namely, a hybrid wireless mesh protocol (HWMP). In tree-based proactive mode, HWMP is completely centralized and constrained by the root node, which causes a bottleneck at the root node. In reactive mode, HWMP always initiates path discovery message broadcasting, which uses unnecessary power resources. They propose a new routing protocol for WMNs based on HWMP. This protocol, which refers to as the decentralized hybrid wireless mesh protocol (DHWMP), provides a different root for different transmissions.

The paper “A Comparative Study of Privacy Protection Methods for Smart Home Environments” aims to study the performance of various privacy protection methods for smart home environments. The result demonstrates that 1) periodic transmission method achieves perfect privacy while resulting in large average latency of real data transmission, 2) probabilistic distribution-based transmission method lessen the latency issues of periodic method while guaranteeing near perfect privacy, and 3) privacy level depends on the number of fake data transmission when real data is triggered immediately.

The paper “A Model to Measure the Success of a Computer-Aided Information System for Prevention of Breast Cancer” proposes a model to measure the success of a computer-aided information system for prevention of breast cancer. The subjects of this study were 291 patients who had been visited a general hospital which located in the area of metropolitan. The present research showed that practice rate for breast cancer prevention can be increased to 57.4-82.6% by education of a computer-aided information system. In order to maintain the education effect well, it is very important to determine adequate education period and perform various programs in consideration of their circumstances. This study can be used to develop health promotion programs that enhance the health behavior for breast cancer prevention.

The Authors of “Accessing KNX Devices using USB/KNX Interfaces for Remote Monitoring and Storing Sensor Data” analyzes that nowadays it is very common for homes or buildings in general to have some kind of automation system for the efficient use of energy and for common comfort matters like illumination and blinds & shutters controlling, among others. It can easily add to these systems different kind of sensors for different uses like: monitoring building structure health, monitoring elder people behavior, etc... This work have developed a system that access data from connected KNX sensor devices and sends it remotely to a MySQL server using IP packets.

Paper “Cyberspace and Intercultural Strategy” is concerned with the emergence of a new generation of ubiquitous computing that will play a beneficial role for urban social networking and interaction. Many now believe that the power of computer-mediated communication (CMC) and massively multiplayer online games (MMOGs) can create a new virtual space, providing opportunities to engage directly with people of other cultures. This can help manage urban diversity and foster dialogue between people from different cultures in day-to-day life.

The paper “Iterative Interference Reduction with MMSE-FDE in the Downlink for a PB/MC-CDMA System” introduce novel interference cancellation schemes in order to improve the performance in the partial block multi-carrier code division multiple access (PB/MC-CDMA) environment called OIC (order interference canceller). The OIC is able to achieve better performance by reducing the interference and compensating fading channel of signals.

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**Editors of the March Issue on
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