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 23 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 "Design and Implementation of ICT-Based System for Information Management of Livestock Farm", proposes ICT based system for information management of livestock farm to provide efficiency operation in livestock farm by managing information of livestock farm such as livestock information and environment information and fire information. Proposed system provides optimal breeding environment by monitoring real-time information of livestock farm and manage overall information of livestock such as disease forecasting and estrus detection and delivery time.

Paper "Design of City Logging System using Searchable Image Encryption System of Streaming Service" proposes a city-logging system to collect various types of data around the roads using mobile observation equipment. Since the collected image data from CCTV contains several things which can violate someone's privacy, it presents a secure method to search CCTV image using searchable image encryption system. In addition, it illustrates a city-info service which can be provided by analyzing the collected data.

The paper "Effect of Urbanization on Local Climate in Changzhou City in Recent 60 Years" analyzed the data about the development of the city such as the population, ecology, arable land and build-up area. The results show that: the effect of urbanization on temperature is more obvious. The differences between gross production, arable land at the end of year, build–up area, road area at the end of year and temperature are highly significant. Through analyzing the trend of climate change and the data of urbanization over the past 60 years in Changzhou, the effects of the rapid development of urbanization on local climate change are noticeable.

The Author of "Design and Implementation of the Smart Virtual Machine on iOS Platform for the Mobile Game Portability" designed and implemented Smart Cross Platform's content execution component, Smart Virtual Machine based on an independent neutral language to be run in iOS. In the Smart Virtual Machine, the programmer can make a program not being restricted to the development language of a particular platform environment, making it is easier to port previous contents or provide service of a single program to multiple platforms.

Paper "A Web Concurrency Control Agent running on a Home M2M Network" proposed a new model running on Home M2M Network for web concurrency control by analyzing the window and attributes of the attributes of the object, and based on this, a mechanism that

offers a seamless view without interfering with error and application program sharing is also suggested.

The paper "Cluster Based and Energy Efficient Coverage Protocol for Wireless Sensor Networks" propose a new Energy Based Coverage Method (EBCM). The proposed method decreases the energy consumption and prolongs the network lifetime. The effectiveness of the proposed method is evaluated using NS2 simulator.

The Authors of "Multi-Paths Multicast Overlay Tree in Hybrid Mobile Ad-Hoc Network (HYMANET)" proposes a novel addressing technique to generate multi-paths multicast overlay trees using multiple parent-child(n-hop away MN - (n+1)-hop away MN) relationships according to the number of hops towards AP(access point) in hybrid ad-hoc network. Thus this technique can provide robust overlay tree in spite of movement of MNs. And the proposed algorithm is designed to minimize redundant multicast streams. The overhead for supporting multi-path multicast overlay tree is only 8-bit except MN's ID number.

The paper "An Improved MAC Protocol for WBAN through Modified Frame Structure" aims to satisfy with these requirements and improve energy consumption rate that tends to grow high as the number of nodes increases. For the efficient and objective evaluation of the proposed MAC protocol, IEEE 802.15.6 MAC is used to compare with it and it show that the advantage of the proposed MAC meet the expectation.

Paper "Proposal for Improving Connectivity and adding Authentication and Security to KNXNet/IP Protocol" propose some mechanisms for trying to fix these problems and finally it implement and test them using real KNX devices. Due the nature of KNXnet/IP protocol it presents some connectivity and security problems inherent to the protocol definition.

In the paper "Design and Implementation of the Intelligent Music Recommender System on the Mobile Phone" analyze the users' emotions and recommend it to them. Music applies Valance-Arousal Model for classifying emotions and utilized Korean morpheme analyzer to understand its meaning by extracting verbs. This system is listening to music followed by the mobile phone's text message. In this paper, it designed and implemented the intelligent music recommender system.

In the paper "Activity centered Design of Smart Phone User Interface: Learning App Execution Patterns with Neural Network Model" propose an intelligent method using BAM network to minimize searching for the frequently asked Apps by recognizing and learning user's signal to execute them. This is a form of activity-centered design to maximize user's convenience in user interface of a smart phone.

The Authors of "A ZigBee-based Building Energy and Environment Monitoring System Integrated with Campus GIS" proposed the design and development of a Building Energy and Environment Monitoring System (BEEMS) for smart campus applications. The system is implemented based on distributed sensor nodes using ZigBee technology, which empowers the collection and monitoring of various types of measurements that reflect the energy consumption and environmental status of buildings. These parameters include temperature, humidity, air velocity, sound, bubble globe temperature, TVOC, CO_2 concentration, air quality level, et al. The application software system is developed using jQuery-based Ajax

general interactive architecture, and further integrated with campus GIS, which offers rich analysis and report functions for monitoring both energy consumption and environment parameters.

Paper "Analysis of Common Security Factor on Energy Industry" presented the common security factor that is Account Management, Separation of Duties, Least Privilege, Media Access, Media Marking, Media Storage, Media Transport, Physical Access Authorizations, Monitoring Physical Access, Visitor Control, Emergency Shutoff, Emergency Lighting, Fire Protection, Temperature and Humidity Controls, Water Damage Protection, Location of Information System Components, Denial of Service Protection and Boundary Protection. This paper is presented that Energy groups are generally manage the preferentially protection of external access, data flow, environment (temparature, humidity) parts.

The paper "Use of Artificial Neural Network for the Prediction of Ammonia Emission Concentration of Granulated Blast Furnace Slag Mortar" carried out an artificial neural networks study to predict the quantity of ammonia gas (NH_3) of Granulated Blast Furnace Slag (GBFS) cement mortar. A data set of a laboratory work, in which a total of 4 mortars were produced, was utilized in the Artificial Neural Networks (ANNs) study. The mortar mixture parameters were four different GBFS ratios (0%, 20%, 40% and 60%). Measurement ammonia of moist cured specimens was measured at 1, 3, 10, 30, 100, 365 days. ANN model is constructed, trained and tested using these data.

In the paper "Introducing Virtuality to Enhance Game-related Physical Artifacts", present the Augmented Trading Card Game (Augmented TCG) as a case study for enhancing physical artifacts by integrating virtuality. Augmented TCG monitors the opponent's movement using MS Kinect and maps them onto a virtual character representing the opponent rather than directly displaying the real opponent's actions. An image of the opponent's card is also projected onto the table in front of the player. Thus, the player feels as if he/she is playing face-to-face with the opponent. Moreover virtuality allows more information to be displayed during game play.

The Authors of "The Acquisition of the Thematic Roles of the English Verb Open by College Students" provide an analysis of the acquisition of the English verb open and its thematic roles in L2 English by Korean learners. First, the Korean learners in the study did not give support to the subject hierarchies of Larson (1988), Grimshaw (1990), Dowty (1991), and Saeed (2009) and exhibited the following order in the experiment of the thematic roles of open and yelta 'open': Agent > Goal > Instrument. It have contended that the learners' subject hierarchy (agent > goal > instrument) should be represented in the core grammar since it comes from the learners' cognition and it is supported by the synchronic computational system (the British National Corpus). Second, the results of the experiment clearly illustrate the fact that the Korean learners do entertain the hypothesis that learners look for similarities whenever they can find them, but they do not respect Chomsky's UG theory since the acquisition of English thematic roles by the Korean learners takes place through positive transfer and negative transfer of their native thematic roles. Third, it have argued in this paper that when all three thematic roles (agent, instrument, and goal) appear within a sentence, the Korean learners judged the order of English thematic roles in accordance with their L1, namely transfer, since the orders of the three thematic roles that the English verb open allows are a subset of the orders that the Korean verb yelta 'open' allows (the Superset Principle). Additionally, it has claimed that the subject hierarchy captures the order of acquisition of

subject functions and reflects the degree of markedness which correlates with the order of acquisition. Finally, it has maintained that agent subjects and goal subjects are absolutely universal subject functions which are governed by UG, whereas instrument subjects are subject functions that lie outside UG.

Paper "Analysis of Acoustic Properties of the Forest in Winter and Spring" measures the overall acoustic properties of spring and winter, and their difference is investigated from the perspective of environmental change. Forest in winter is very calm with occasional sound of birds and is devoid of insect sounds. The frequency components of winter forests are shifted towards the lower frequencies however, unique sounds caused by walking on snow compensates for this. Spring forests gives off a sense of gradually increasing vitality moving away from the calm of winter. Especially, as both the variety of bird species that cry and the frequency of those cries are increased significantly in the spring, the ratio of middle to high tone energies of the sound was about three times that of the 10% measured during winter. In all environments volume was louder than winter..

In the Paper "Simulating House Cooling Methods to Decrease Energy Consumption by Creating Awareness and Attitude Change", presents a housing simulation prototype that applies gamification methods to build awareness on ways to reduce cooling power consumption. An interactive guided persuasion methodology is used to educate homeowners about these alternative techniques so they may choose natural cooling methods instead of relying on electrical cooling appliances.

The Authors of "The Research on Price Prediction of Second-hand houses based on KNN and Stimulated Annealing Algorithm" research the price prediction of Harbin second-hand house market in China and analyze the influences of different attributes on price determination. All the time second-hand house market always reflects the actual market demand so the price trend of these houses is the barometer of real estate market. In this paper it uses KNN-related algorithms to implement the price prediction and stimulated annealing methods to evaluate the importances of attributes. All of these algorithms and techniques will help to set the more reasonable prices and give valuable advice on key factors that will have greater influences on house prices to analyst's decision makers of housing market.

Paper "An Improved Ant Colony Optimization for the Multi-Robot Path Planning with Timeliness" proposed a planning method based on an Improved Ant Colony Optimization (IACO) algorithm. In the solution procedure, the path cost and goal timeliness are taken as two optimization goals. Compared to the traditional optimization algorithm, the IACO algorithm has global superiority which brings about better solution.

The paper "Development and Analysis of Milling Model Coupled Thermal-Mechanical" developed a standard of chip separation was established and a coupled thermal conduction model based on key technologies involved in the milling simulation. 7050-T7452 aluminum alloy materials were used to conduct the high-speed milling simulation. Because of the limitations of geometry, physics chip separation standard, this paper presented a 3D milling chip separation criteria and developed a coupled thermal conduction model by considering the milling temperature and the interaction effects of milling force.

Paper "Research on the Process-level Production Scheduling Optimization Based on the Manufacturing Process Simplifies" manufacturing task and manufacturing process is divided

into generalization and differential theory , applications from manufacturing process optimization results obtained path, based on the manufacturing process optimization mathematical model to study the production scheduling, and by using the improved genetic algorithm, and finally for example, with global production scheduling of matching and process model resources as the foundation for the realization of enterprise process production scheduling optimization and level continue working process decoupling point.

The paper "Simulation System for Optimizing Urban Traffic Network Based on Multi-scale Fusion" is based on the existing technologies for the urban transportation simulation, simulation system based on multi-scale fusion was proposed here through studies at the macroscopic, medium-view and microscopic scale, for the purpose of using the appropriate algorithm for integration. The system was designed to validate its performance on the optimized simulation system of ubran traffic road net. The innovative point to the paper rested with applying vehicle agents to merge systematically at the spatial scale the macroscopic, medium-view, microscopic, realistic and virtual emulation and temporally the past, present and future simulation.

March 2014

Editors of the March Issue on
International Journal of Smart Home