Foreword and Editorial

International Journal of Smart Home

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

This issue contains 20 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 "Design of Multi-Channel Wireless Sensor Networks Based on Compressive Sensing Theory and Spectrum Sensing Theory", at first introduces the causes of the above problems and selects a reasonable wireless channel resources allocation method of the multi-channel WSNs. Then to solve these questions, the theory of compressive sensing and spectrum sensing are adopted to improve the existing multi-channel WSNs. Finally, a new sensor node of the multi-channel WSNs is designed based on the above improvement. By analyzing the monitoring data of the field test, the improved multi-channel WSNs could complete monitoring mission efficiently and accurately, meanwhile it reduced power consumption of the WSNs effectively.

This Research "A Survey on Smart Meeting Rooms and Open Issues" present the features and evaluation methods present in literature and we make a discussion on the open issues.

The paper "Multiple Computation Models for the Prediction of Private Vehicle Ownership in Chinese Area" studies the change regulation of the private vehicle ownership in Chinese area. Due to the impact factors of the change regulation of the private vehicle ownership is various and uncertain, we should take various factors into consideration as much as possible. In this article, we take 11 indicators as the independent variables, while the private vehicle ownership as the dependent variable. Multiple linear regression (MLR) model and artificial neural networks (ANNs) models were developed respectively in order to predict the private vehicle ownership. As an alternative model, we developed grey model GM (1, 1) according to the regulation of the private vehicle ownership.

The research paper entitled "The Modeling Methods of Heavy NC Machine Tool Bolt Joint Based on Virtual Media" proves the formula of virtual media is reliable, can be used in the modeling of heavy machine tool.

The paper "Low Voltage Complementary Metal Oxide Semiconductor Based Internet of Things Enable Energy Efficient RAM Design on 40nm and 65nm FPGA" we are making Energy Efficient Internet of Things (IoTs) Enable RAM. In order to make it energy efficient, we are using low voltage complementary metal oxide semiconductor (LVCMOS) Standards.

The paper "Research on Home Healthcare Management System Based on the Improved Internet of Things Architecture" improved internet of things architecture to redefine the internet of things architecture into the node domain, the network domain and

the application domain so as to design and implement a home healthcare management system based on this improved internet of things architecture.

In the paper "Research on Planning of the Integration of Urban and Rural Areas, and Construction of Landscape Green Space System, of Lucheng City", focuses on the drainage purposes of this system. In addition, to enhance this city's drainage function, it is also demanding to optimize its drainage system, which in this paper we concentrate on the urban sewer system. In this paper, we apply two mathematical models into the drainage analysis and optimization, which are the soil water characteristic curve (SWCC) method and urban sewer system model (USSM), respectively.

In the thesis "Remote Instant Interactive of Smart Building Home Equipment Based on Dynamic IP" Solve these problems, designing a solution based on android terminal, to achieve the purpose that two-way interaction in inner and outer net and multi-dwelling management through model tests.

The paper "Battery Management System Design and Implementation of Intelligent Emergency Light Based on the Technology of Loose Capacitance and FSM" presents a design and implement method of battery management system about emergency light based on loose capacitance synchronous sampling measure technology and balanced technology.

Authors of the paper "Moving Target Detection and Tracking in Complex Background" A background dynamic generation algorithm is presented in the paper, and the background dynamic generation algorithm is used to dynamically construct background image, the impact of the environment change is reduced in a certain extent for the moving target detection.

The research paper "Research on Novel Image Classification Algorithm based on Multi-Feature Extraction and Modified SVM Classifier" we conduct theoretical analysis and numerical analysis on novel image classification algorithm based on multi-feature extraction and modified SVM classifier. Image object classification and detection are two important basic problems in the study of computer vision, image segmentation, object tracking, behavior analysis and so on the basis of other high-level vision tasks.

This study "The Application of the Smart Technique in the Construction and Management of Urban Park Green Spaces", combines the life cycle of park green space with users' requirement, and establishes an overall frame of a system in which smart technique is applied to the park green space, namely a layered structure which consists of the sensing layer, network layer, supporting layer and application layer.

In the paper "Application of Digital Simulation Technology in Environmental Design", takes the overview of digital simulation technology as a key point, discussing the influence of digital simulation technology on the Environment industry as well as its specific application, which can make the designers update designing concept during the process of Environmental design, so as to achieve the personalized requirement of the modernization, to achieve the combination of the environmental art ,the design art and digital technology, the environment art and digital technology can bring out the best in each other, the perfect combination, make the environment art design can be better and better.

The paper "The Research of Intelligent Irrigation Control System of Rice in Cold Region" To improve these problems, the intelligent irrigation control system based on PLC and configuration software is designed. The data acquisition and monitoring of water

level and water temperature and other parameters are carried through the wireless transmission with PLC as the core, to decide whether irrigation and drainage. In order to solve the problem of cold water harm of rice , the water of Sun pool is heated by solar heating system.

In this paper "Research on Operation Risk and Perceived Physical Condition of Old People: an Empirical Analysis based on Online Follow-Up Survey" we collected data from 561 senior citizens by using online follow-up survey, and find out the influencing factors related to perceived physical condition. The result shows that the score of the perceived physical condition is 72.91 as compared to gender (T=4.032,P=0.045), age group(T=35.561,P=0.000), educational level (T=15.116, P=0.000), monthly income (T=2.800,P=0.039), marital status (T=15.458,P=0.000), self-care ability (T=49.675,P=0.000), place of abode (T=21.127,P=0.000), previous profession (T=10.030, P=0.000), type of registered permanent residence(T=11.542,P=0.001), chronic disease (T=107.02,P=0.000).

This report "Ontology-based Context Modeling to Facilitate Reasoning in a Context-Aware System: A Case Study for the Smart Home", presents an ontology-based reusable generic context model for context-aware systems. This model provides a context vocabulary and structure for contexts and their semantics which are essential for reasoning. We evaluate the effectiveness of this model for both ontology and rule-based reasoning in the smart home domain and the result we obtain is promising.

The paper "Design of Sunshade Board with South External Window of Residential Building in Hangzhou Based on Software Simulation Analysis of Energy Saving", this paper guarantees that the proposed size of horizontal sunshade board and integrated architectural design will decrease energy consumption.

In this paper "Research on the Implementation of Image Degradation and Restoration by using Model-Based Design Methodology" the linear image degradation model and common image restoration methods are described, and the system of image degradation model and image restoration is built. The simulation results show that the system of image degradation and restoration using Model-Based Design (MBD) methodology is not only efficient and simple, and convenient for hardware implementation.

In paper entitled "Efficient Anonym Smart Card Based Authentication Scheme for Multi-Server Architecture" authors first show that a previously proposed scheme does not satisfy perfect forward secrecy and is not resistant against insider attacks. Next, they propose a very efficient smart card based authentication scheme, solely using xor and hash operations, which is resistant against dishonest users and servers. Also anonymity and untraceability of user's behaviour is avoided.

In the study about "A Study on the Proper Position of Illumination Sensor for Dimming Lighting Control Based on Practical Life: Focusing on Summer Solstice and Winter Solstice" there was derived each position of illumination sensor at the summer solstice and the winter solstice Although a variety of studies for lighting energy saving has been on the rise and increased due to increase in energy consumption of lighting in building sector they are carried out in a limited environment of technology development in the lighting energy. In an investigation on existing previous studies, it has been found out that the position of illumination sensor for control was derived on the basis of work surfaces and eye-level illumination, so in this study, it is intended to construct the foundation materials for lighting control after deriving the position of illumination sensor for dimming lighting control in real life. In this study, there was conducted a performance

evaluation through the construction of test bed on a real life basis and the illumination range for lighting control was set to 400 lx on the basis of the KS A 3011. The conclusion is as follows. 1) At the summer solstice, S11 position 1,000mm away from a skylight is shown as a proper position of illumination-environmental collection for dimming lighting control. 2) At the winter solstice, the dimming lighting control is unnecessary, but S1~S3 positions within the range of 5,000mm~6,000mm are shown as proper positions of illumination-environment collection for dimming lighting control. 3) When generalizing the results shown at the summer solstice and the winter solstice, S11 position 1,000mm away from a skylight is shown as a proper position of illumination-environment collection for dimming lighting control. 4) As a result of effectiveness at S11position, energy saving can be attained by 16~44% compared to other positions, and the analysis is carried out effectively. Therefore, it is determined that in the future study it will be necessary to supplement by conducting a performance verification in accordance with illumination standards for lighting control and diverse time zones as well as lighting control positions.

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Editors of the September Issue on
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