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 24 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 "New Interface Design Using Accelerator Sensor for Smart Phone" suggests new interface as replacement. Smart devices use built-in acceleration sensor. Low pass filter and Kalman filter reduce noise and variability of the output of the acceleration sensor to enhance precision and certainty, which is then applied in widgets or menus to test usability and functionality through experiments.

In the paper "Research of Regional Forest Fire Prediction Method based on Multivariate Linear Regression", some of the data Yichun fire nearly a decade predict the forest fire meteorological data analysis, using multivariate linear regression to derive forest fire prediction method in the wireless sensor networks.

Paper "A Clustering Sleep Scheduling Mechanism Based on Sentinel Nodes Monitor for WSN" proposes a clustering sleep scheduling mechanism based on sentinel nodes monitoring for WSN. The mechanism combines the network clustering strategy with the node dormancy strategy, and improves the method of selecting the candidate cluster heads randomly in Energy-Efficient Unequal Clustering (EEUC) algorithm.

The research paper entitled "A Study on Performance Evaluation of Mixed Light Shelf Type According to the Angle of Light Shelf" investigates the effect of angle adjustment of a mixed type light-shelf on indoor natural lighting and determines efficient light-shelf lighting performance values by using an actual size test-bed. This study was conducted in the following procedures: 1) Previous studies were investigated to analyze the definition of a light-shelf and identify experimental factors for a light-shelf; 2) On the basis of previous studies, the light-shelf experimental factors were set up with reference to the illumination values under clear sky at the meridian transit altitude in each season to perform an experiment; and 3) The performance of the light-shelf was evaluated to examine the effectiveness.

The paper "A Study of Smartphone Based Disaster Information Reporting System under Disaster Environment" defined two parameters: the communication signal and the battery status. Based on the definitions, authors proposed an algorithm for smartphone based reporting system under disaster environment. With the guarantee that disasters can be reported promptly and accurately and based on the analysis of smartphone power consumption, the algorithm provides power saving mechanisms to obviously increase the system working time.

The paper "The Framework of Home Remote Automation System Based on Smartphone" aims to create a mobile app on a Smartphone device so that the user can control electronic devices; see the amount of flow that has been used in the amount of dollars, so the problem is the difficulty in saving electricity can be resolved. Development and design was done by collecting data using questionnaires to the respondents. Design method using observations, distributing questionnaires and to study literature, and then after that do the design in hardware (microcontroller) made United Modeling Language (UML), database design, code implementation and creation of user interfaces on IOS and Android.

The paper "Zigbee-based Intelligent Home Furnishing" puts forward a set of intelligent household iot system based on ZigBee architecture design. The design scheme can be connected to various devices in the family, In order to realize people and equipment, equipment and equipment between "communication", Greatly convenient people's home life.

In the paper "A J2EE based Management Information System for Higher Vocational Colleges", authors develop a J2EE based management information system for higher vocational colleges. Firstly, they perform an overview of the entire background and situation of the management informatization for higher vocational colleges. Secondly, according to requirement analysis and use case analysis, they divide the system, which requires three roles, i.e., college administrator, enterprise and graduate, into four functional modules, i.e., user login module, college administrator module, graduate module and enterprise module. Thirdly, for architecture design, they adopt a J2EE four-tier architecture, which are user presentation tier, control treatment tier, business logic tier and data persistence tier. Then, they introduce five entities, which are user information table, enterprise information table, graduate information table, recruitment information table and dynamic news table, for the database design. Furthermore, they also illustrate how they implement the final system.

In the paper "An Efficient Electronic Wheelchair Seat Balancing Maintain Methodology Applying Smart Sensors", authors propose a new solution which utilizing the Gyro Sensor and Tilt Sensor in real-time controlling the balance of wheelchair seat. The existing wheelchair systems have the risk of falling when users go uphill because of the uneven weight allocation. To solve this problem, a Gyro sensor is used for measuring the acceleration and gets the correct value of tilting angle. Through various experimentations they prove that by taking advantage of Gyro sensor and Tilt sensor combination, the system is able to determine the correct seat angle in both cases when the wheelchair moving or not. Authors also tackle the power consumption issue in wheelchair, by using ZigBee sensor module to retrieve terrain information in advance and controlling the balance by two motors thus the overall power consumption for seat balancing is reduced significantly.

Paper "A Hybrid Model for Explaining Older Adult' Continuance Intention toward SNSs" develops an integrated model based on the expectation-confirmation model (ECM), the technology acceptance model (TAM), and the theory of planned behavior (TPB), and apply them into the context of older adults' continuance intention toward SNSs. The hypothesized model is validated empirically using a sample collected from 250 older adults who had prior experience with SNSs and was tested against the proposed research model using structure equation modeling. Analysis results demonstrate that satisfaction has the most significant effect on older adults' continuance intention, followed by perceived usefulness, attitude, subject norm and perceived behavioral control.

In the paper "Multi Camera for Surveillance System Ground Detection and 3D Reconstruction", a method for detection ground coordinates to surveillance camera system in a real-time. video capture information from surveillance camera system with SFM(stricter from motion) algorithm presented. 3D reconstruction is rebuilding 3D geometric from multi 2d images. Researcher focus on 3D recognize and matching algorithm. 1st surveillance camera system detection ground mark image. 2nd matching image pattern and compute mark image coordinate information, 3rd compute information combine with position information, 4th reconstruction in 3D space surveillance environment.

Paper "A Framework for NFC-based Context-aware Applications" proposes an ontology-based framework for developing NFC-based context-aware applications, which can perceive user context and offer appropriate context-aware services to the user by combining the NFC technology with context-aware technology. With the proposed framework, application providers are enabled to develop NFC-based context-aware applications in a simple way. Meanwhile, the framework provides security service for protecting data integrity of the NFC context. This paper presents the framework's design, implementation and a real use case scenario that shows the validation of the approach.

The paper "Research on Advanced Control Strategies of Induction Motor System", a new control strategy----Tornambe control is used in the speed regulator of IM system instead of ADRC. It has the similar control thought to the ADRC, and has the simple structure, less setting parameters, and is convenient to study and use. In this paper, the direct torque control strategy is adopted to drive the IM. The active disturbance rejection control and Tornambe control are used instead of traditional speed regulator, the system performance of the two control strategy are compared. The results show that the system performance of TC strategy is better than that of ADRC.

The paper "Context Awareness of Smart Space for Life Safety" aimed at preventing crimes and various accidents. The space of residential environment provides service of preventing and avoiding various risks by demonstrating the function of being aware of various risks in advance. This study proposed a plan that guaranteed concealment in the environment which used cheap small sensor and enabled advance awareness even for a risk which deviated the range of advance information-based data modeling. Risk context reasoning was made to become clear through repeatedly checking a risk factor to be identified, as a multi-sensor data fusion-based risk awareness scheme which used DST.

In the paper "Kiln Landscape Evolution Simulation Based on Particle Swarm Optimization and Cellular Automata Model", authors create virtual maps of ancient study area and present such concepts that unambiguously realize a combination model to understand how land has transformed kiln in ancient Jingdezhen DongHe River Basin from the Yuan Dynasty to the Ming Dynasty. In this model, Model parameters and neighborhood rules are obtained with the cellular automata model melt modified Particle Swarm Optimization algorithm. Meanwhile, model performance is evaluated using Moran's I index estimation for selected landscape pattern indices and make a comparative analysis of different evolution with different number of candidate site and different conversion threshold. In overall, the model that they propose is effective and feasible in simulating kiln landscape evolution in ancient when Geographic Information and System information are lacking.

The paper "Development of 3D Visibility Analysis Models Using NURBS in A Residential Development" aimed to develop an advanced visibility analysis programme based on vector data (NURBS) in order to improve accuracy of the process and result. In order to rectify of the new application, a residential development in Seoul has been chosen as case study. With newly produced visibility analysis produced from VE3D, the study analyses terrain, high-rise building blocks and any built up structures in 3D forms. After case study, VE3D which was developed for visibility analysis from vector-based datasets was able to illustrate high level of detail in visibility identification better than using conventional Arcview 3.3 programme.

Paper "Spatial Analysis of Rural Medical Facilities Using Huff Model: A Case Study of Lankao County, Henan Province" aims to assess the spatial distribution of rural medical services by using geographic information systems (GIS) and spatial accessibility indexes. Lankao County in Henan Province and 21 hospitals of township and county are selected as study samples. First adopted ArcGIS10.0 to collate data. Second, the authors established a network dataset to analysis the maximum coverage for hospital services space accessibility. At last, established Huff model and built a scientific evaluation for the current hospitals' distribution.

The paper "Study on Emporium Airflow Optimization in View of Cooling Load Distribution Indoor" measured the lighting and body cooling load at three shopping malls, analyzed lighting and body cooling load on the different floors ,different lighting area, then compared the measured value and the design manual recommended values, According to the results of analysis, recommended values is wrong. A personalized airflow forms. is proposed according to the actual personnel distribution of the shopping mall; the plan of ceiling exhaust is proposed according lighting heat dissipation, the ventilation efficiency of air conditioning systems proved be significantly increased after the improvements of airflow form, it provide an effective reference to design air conditioning system for these types of shopping malls.

The paper "The Typical Application of Building Energy Consumption Monitoring and Energy Management: A Case Study" first introduce the structure of the monitoring platform, and then put forward an error analysis principle to improve the precision of heat meters. A case study is given for a building in "hot summer and cold winter" area, including the installation of various measuring meters and data verification. Finally, the energy consumption data of the building from January to December in 2013 were analyzed.

The paper "Mobile Social Helping Platform of LBS", develop Mobile social helping platform (MSH) of LBS, which realize the sharing of sociality. First, they analyze the requirement of MSHP platform, then design its architecture and database, and finally discuss the key technologies of MSHP. The platform makes use of open source technology, implements and optimizes LBS service. The simulation results show the system has good portability and maintainability, which is easy to be commercialized.

The Authors of "Considerations for Web of Object Service Architecture on IoT Environment" propose a service architecture which includes various devices for providing web base IoT services. Secondly, they also propose a service platform which supports service orchestration and composition with device objectification and finally describes structure and functionalities of web of object gateway.

The paper "Moderating Effects of Gender in the Acceptance of Mobile SNS Based on UTAUT Model" incorporates perceived enjoyment with UTAUT theory as research base model and investigates the difference between male and female users in the acceptance of Mobile SNS. Data collected from 359 respondents in China is analyzed. The analysis result shows that gender moderates the effects of Social Influence on Behavioral Intention and Facilitating Conditions on Use Behavior.

The paper "Development of a Smart Home Context-aware Application: A Machine Learning based Approach" present a context-aware application which can provide service according to predefined choice of user. It uses Mahalanobis distance based k nearest neighbors classifier technique for inference of predefined service. They combine the features of supervised and unsupervised machine learning in the proposed application. This application can also adapt itself when the choice of user is changed by using Q-learning reinforcement learning algorithm.

Paper "Improved Channel Estimation Algorithms based on a Proposed Signal Model for PUCCH Format 3 in LTE-A" proposes a special form of signal model. Based on this proposed model, they propose a low complexity channel estimator based on LS and cubic spline interpolation, and then they put a LS and DCT algorithm to improve the interpolation performance. Finally, for more accurate estimator they drive the third approach based on MMSE and DCT. A series of theoretical researches and simulation results show that all of them are suitable for the proposed signal model even in the environment of high-speed movement; especially the algorithms with DCT have a better performance.

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**Editors of the January Issue on
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