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EDITORIAL

Preface—special issue "Energy Efficiency in Building using Intelligent computing for Smart Cities"

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Great strides have been made in various areas of building technologies to improve energy efficiency in buildings by applying innovative technologies to reduce energy consumption and enhance indoor environmental quality in buildings. Especially, these efforts are currently being considered together with the application of new energy systems harnessing natural energy and the possibility of taking advantage of today's digital technologies, exploiting big data and online data processing whenever it is possible.

Green building (also known as sustainable building, bioclimatic building, etc.) brings together an interdisciplinary combination of practices and techniques to reduce the impact of buildings on the environment and human health by considering the greenery of the site, soil water content, building energy conservation, recycling of building's rainwater and daily wastewater, sustainable building structure, green materials, etc. Energy efficient building is one of the green building issues and is closely related to other dimensions.

A smart city refers to a city equipped with the basic infrastructure to give a decent quality of life, a clean and sustainable environment to the citizens using smart technology-based solutions. It is a smarter way to deliver governance, providing city services to its residents and develop the infrastructure. Cities in many countries

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globally are governed by multiple organizations and authorities. The different spatial entities with multiple boundaries deter effective planning and governance.

The special issue of the Journal titled "Energy Efficiency in Building using Intelligent Computing for Smart Cities" is an excellent collection of review and research articles in the field of Energy efficiency, smart building and smart cities. An open call for paper was issued for this special issue. The guest editors feel happy to announce this special issue of the most reputed journal of Springer.

From a wide range of interesting research papers on various aspects of Smart Buildings, Smart Cities cum related areas, the guest editors, after undergoing exhaustive peer-reviews from experienced and well-known reviewers, have carefully selected seven research papers and one review paper. The final decision for the inclusion of seven research papers and one review papers has been strictly based on the outcome of the rigorous peer-review process, shortlisting successful research papers by researchers as per reviewers' comments and guidelines.

A brief summary of the research papers included in this special issue is enlisted as follows:

The first article by Alawadi et al. [1] titled "A comparison of machine learning algorithms for forecasting indoor temperature in smart buildings" compares 36 Machine Learning algorithms that could be used to forecast indoor temperature in a smart building. More specifically, the researchers conducted experiments using real data to compare their accuracy in terms of R-coefficient and Root Mean Squared Error and their performance in terms of Friedman rank. The results reveal that the ExtraTrees regressor has obtained the highest average accuracy (0.97%) and performance (0,058 %) over all horizons.

The second article by Xijiang [2] titled "Green building design method based on system ecology. Energy Systems, 1–18." proposed a kind of green building design based on system ecology. The design method comprehensively reflect the connotation of the green building design, and construct the index groups into an organic whole at different levels. In addition, the whole process of the design method can be implemented by computer, which simplifies the cumbersome computation process and made the green building design approach more intelligent and model oriented. The researcher compared the proposed method with the traditional methods, and was observed that the new method is more feasible, effective and convenient, which has provided a new idea for the work of the green building design methods in the future.

The third article by Kumar and Jaiswal [3] titled "Scalable intelligent data-driven decision making for cognitive cities" proposes methodology to leverage deeper insights of application of intelligent computation techniques for sentiment analysis of cognitive cities using user-generated data to improve the urban ecosystem. The results are evaluated and analyzed on Twitter datasets that are constructed by the students of the Stanford University. It is observed that the alliance of big data and social media analytics using intelligent sentiment computation has helped in making citizens smart for taking smart decisions and eventually building a smart city.

The fourth article by Gadhavi and Bhavsar [4] titled "Adaptive cloud resource management through workload prediction" proposed a novel cloud framework model titled Auto-Regressive Integrated Moving Average-workload Prediction for

Efficient Resource Provisioning (ARIMA-PERP) to process data in automation with adaptive resource and workload management strategy. To serve the maximum number of user requests, performance metrics of the proposed approach are evaluated. It is observed that the proposed model has achieved an accurate prediction by 91.11%, which meets the efficient resource utilization for the demanded workload. As compared with the exiting approaches, the model achieved better performance by 0.11% for accurate prediction. The proposed architecture is intended to provide the resources dynamically and efficiently satisfying the demands of the user.

The fifth article by Sharma and Tayal [5] titled "Indian smart city ranking model using taxicab distance-based approach" proposes Taxicab Distance-Based Approach (TDBA) to rank the "Indian smart city". Researchers used the "Indian smart city model" define with eight dimensions matching to cities of India. The model takes a smart data-driven decision based on 80 indicators of the city. The "Indian smart cities" are ranking according to the calculated distance of optimal indicators values. The TDBA find the optimal solution on the bases of "Indian smart city" indicators multiple values. The approach calculates the optimal distance solution to find the best result. The result shows the ranking of "Indian smart cities" on the bases of a defined model using TDBA. The ranking gives a status of growth by comparing the cities' rank. The cities can change and update their planning according to cities rank. The result clarifies cities vision and makes a blueprint of the cities it wants to be in the future.

The sixth article by Mahapatra and Nayyar [6] titled "Home energy management system (HEMS): concept, architecture, infrastructure, challenges and energy management schemes" presents a comprehensive review covering the various technical and conceptual aspects of efficient power management at home front. A systematic review proposed by several researchers till date was considered. The study focuses on the concepts, technical background, architecture and infrastructure along with various schemes as well as goals including various issues and challenges faced with HEMS systems. In addition, the paper proposes a novel methodology for improvising the home design architecture by incorporating the concept of green building in order to reduce the energy consumption done by a resident at their home front.

The seventh article by Shrivastava and Kumar [7] titled "Intent and permission modeling for privacy leakage detection in android" explores Android intent and permission as an essential feature of malware detection and analysed their variation on different parameters. Experimental results show a high rate of malware detected by combining intents with permissions as well as sensitivity analysis have shown optimal and efficient results. Researchers also demonstrated the results by experimenting with the combination of Android intents and permissions, to show that these traits do not overlap and our optimal results have shown Android Intent is a plausible trait in malware detection.

The eight article by Alrabea et al. [8] titled "A task-based model for minimizing energy consumption in WSNs" provides a framework for preparing the tasks, in which each node decides to do next according to the observed portion of the request. Within this Framework, the application efficiency and the energy consumption is provided by a weighted reward function and results in better energy/ performance. The suggested approach was analyzed in a target monitoring program. And the

simulation experiments show that cooperative approaches for this type of application are superior to non-cooperative approaches.

1 Conclusion

The main objective of the special issue was to stimulate discussion on the design, use and evaluation of various technologies for smart sustainable cities with smarter applications, including, smart building, smart factories, Intelligent transportation, and smart data-driven decision making. Moreover, dynamic domains of applied artificial intelligence such as machine learning, data mining and semantic web, amongst others, provide novel and sophisticated techniques as scalable intelligent solutions.

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