

Paper Type: Original Article



# Smart Home Environment Future Challenges and Issues

Victoria Nozick\*

Operations and Information Management Group, Aston Business School, Aston University, Birmingham B4 7ET, United Kingdom; victoria.nozick@gmail.com.

Citation:



Nozick, V. (2023). Smart home environment future challenges and issues. *Computational algorithms and numerical dimensions*, 2(1), 12-16.

Received: 24/11/2022

Reviewed: 12/12/2022

Revised: 09/01/2023

Accept: 23/01/2023

## Abstract

The most energy consumption in smart domestic network is smart plugs because of an uninterrupted supply. Consequently, this studies article accommodates about home automation electricity management that indicates the balance strength consumption between the gadgets in a regular c program language period. Also, this research article presents future project duties in protection troubles in smart home surroundings. Additionally, the belief for smart home surroundings focuses the Interoperability, Reliability, Integration of clever houses and term privacy in context, term safety and privacy vulnerabilities to smart domestic. The energy may be decreased in the direction of inexperienced surroundings. Furthermore, the studies paper is considering the evaluation of calculate the terrible outcomes in environment because of complete home automation system. While calculating these bad results, the Life Cycle Assessment (LCA) ought to be in sum general. This study makes use of two analyses the strength intake for environment effect of Home Energy Management System (HEMS). The research article discusses home automation gadget consumes the strength for special devices linked for smart home.

**Keywords:** HEMS, IoT, Water, Monitoring.

## 1 | Introduction

 Licensee  
**Computational Algorithms and Numerical Dimensions.**  
This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<http://creativecommons.org/licenses/by/4.0>).

Each human desires to be a comfort lifestyles fashion with protection way. In many evolved and complete time cold nations, they will use their telephone to show at the kitchen appliance at the same time as you are feat work so dinner is ready by the time, they arrive domestic [1]-[2]. Otherwise synchronize the heating with weather forecast to create wonderful their domestic is never unduly bloodless. The smart domestic can be named in many terms as follows; “home Automation”, “Assistive technology”, “and e-health”, “virtual in residence”, “clever environment”, “automated residence”, “and clever related domestic & clever in residing” [3]-[4]. Also, our existence fashion is transferring in the direction of consolation in residing surroundings regularly. The development of the IoT is blended with many factors and clever sensors. The information is exchanging among the various sensors and home automation system to user cell gadgets [5]-[6]. The parent 1 shows simple IoT gadgets for clever domestic environment.



Fig. 1. The smart home environment.

## 2 | Literature Review

In essence of clever home have been basically conceptualized and later evolved to robotically address the everyday requirements of aged and customers with disabilities [7]. Likewise, with this international agenda for achieving belongings city future, smart houses have become quite a few and a number of tangled with advanced belongings technology. Plenty of currently, opportunity customers have additionally shown hobby to degree in such extremely machine-driven houses. Though, its miles often argued that there's an important for the smart home to verify harmoniousness among the planning of residing near, style of occupants and additionally the senses of embedded intelligent technology [8]-[9]. Likewise, clever houses ought in an effort to unceasingly adapt themselves to the rapid modifications of era and occupant's goals. This changed into accomplished primarily based often on retail evaluation schemes, data regarding numerous domestic appliances and name bushes based totally commonly on their consumption behavior. This platform furnished for us additionally a simple access to choose displays of switching status and consumption of all home equipment [10]. Faraway summary of the facts and electricity use control thru clever phone and terminal pc changed into conjointly authorized.

## 3 | Proposed Work

The clever plug contains greater relative emission function in all factors as proven within the graph. However, the human toxicity concentrates of more wide variety of computer, computer. Consequently, there have to be a minimum of subject gadgets causes [11]. Also, it will control through remotely in addition to directly with within the environment setup around the home automation. Additionally, this result dialogue might be shown for differentiating between the gadgets utilization. Thus, the electricity consumption can be reduced via controlling numerous gadgets in domestic automation environment [12].



Fig. 2. Life cycle assessment.

### 3.1 | Summary of Study

It is recommended that the potency of clever homes is predicted to be climaxed while using actual-time techniques [13]. The simulation outcomes disclosed that the projected system will decrease the peak to common quantitative relation of the entire electricity demand, the full electricity price in addition as user’s individual each day energy charge.

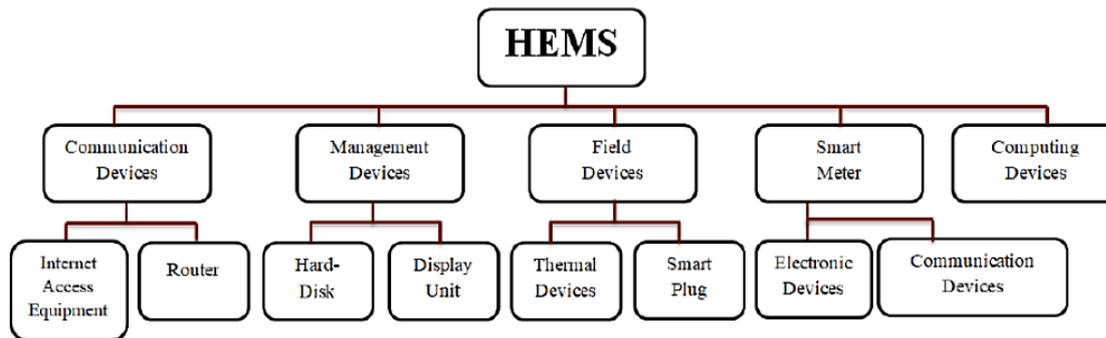


Fig. 3. Overview of home energy management system.

### 3.2 | Advantages

The advantages are as follows:

- I. Managing all of your home devices from one place [14].
- II. Flexibility for new devices and appliances.
- III. Maximizing home security.
- IV. Remote control of home functions.
- V. Increased energy efficiency [15].
- VI. Improved appliance functionality.

### 3.3 | Disadvantages

The disadvantages are as follows:

- I. Significant installation costs.
- II. Reliable internet connection is crucial.
- III. Security issues.
- IV. Technological problems in connected homes.
- V. You may lock yourself out of your own house [16].
- VI. Helplessness if technology fails.
- VII. Some people may not like smart technologies.

### 3.4 | Real-Time Applications

The real time applications are as follows:

- I. Cameras will track your home's exterior even if it's pitch-black outside [17].
- II. Plug your tabletop lamp into a dimmer instead of the wall socket, and you can brighten and dim at the push of a button.
- III. A video door phone provides more than a doorbell -- you get a picture of who's at the door.
- IV. Motion sensors will send an alert when there's motion around your house, and they can even tell the difference between pets and burglars [18].
- V. Door handles can open with scanned fingerprints or a four-digit code, eliminating the need to fumble for house keys.



VI. Channel modulators take any video signal, from a security camera to your favorite television station, and make it viewable on every television in the house.

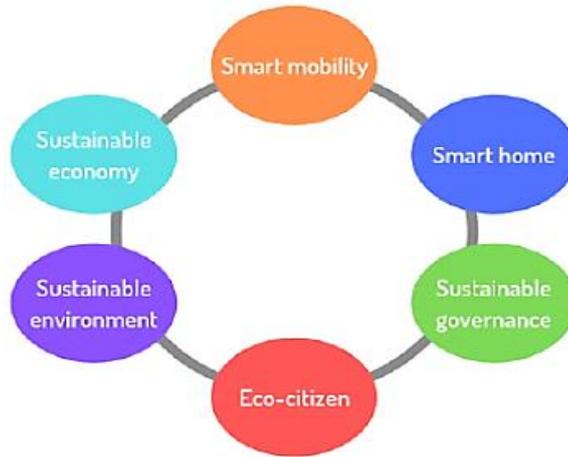


Fig. 4. Factors for smart home environment.

## 4 | Conclusion

Our proposing procedures can limit the energy utilization in different home machines and it gives the general great power utilization [19]. The around 18 hardware power utilization will be our thought in home mechanized framework. This energy ought to be controlled and overseen for the brilliant home completely robotized framework for green climate [20]-[21]. Likewise, the LCA concentrate in this paper gives great effect in energy saving design. This examination work centers energy utilization in two distinct conditions. Initial one is ordinary with practically no control and overseeing of different gadgets with in general estimation. Here we came by an outcome in energy utilization for by and large model is 3511.12kWh. Next one is the energy is controlled and overseen by our proposing techniques and got the energy utilization is 3255.17kWh. Accordingly, by and large energy utilization distinction is 255.95kWh in brilliant home computerization network framework. While Indian guideline centers around period of sensorial gadgets and green climate [22]. This climate impact is giving this great energy saving per unit and it prompts brilliant home air rapidly. Additionally, our overview is about the general emanation effect of every single part which is related with IoT brilliant organization framework. One in every one of the flimsy spots of the presented LCA evaluation is that it considers a rigid outflow issue. We can infer that we needed to get a kick out of the chance to search out the harmony between what we tend to truly need to oversee between LCA evaluation and energy utilization [23].

## References

- [1] Mohapatra, H., & Rath, A. K. (2020). Fault-tolerant mechanism for wireless sensor network. *IET wireless sensor systems*, 10(1), 23-30.
- [2] Mohapatra, H., & Rath, A. K. (2019). Fault tolerance in WSN through PE-LEACH protocol. *IET wireless sensor systems*, 9(6), 358-365.
- [3] Mohapatra, H., & Rath, A. K. (2019). Detection and avoidance of water loss through municipality taps in India by using smart taps and ICT. *IET wireless sensor systems*, 9(6), 447-457.
- [4] Mohapatra, H., & Rath, A. K. (2020). Survey on fault tolerance-based clustering evolution in WSN. *IET networks*, 9(4), 145-155.
- [5] Mohapatra, H., & Rath, A. K. (2021). Fault tolerance in WSN through uniform load distribution function. *International journal of sensors wireless communications and control*, 11(4), 385-394.
- [6] Mohapatra, H., & Rath, A. K. (2020, October). Nub less sensor based smart water tap for preventing water loss at public stand posts. *2020 IEEE microwave theory and techniques in wireless communications (MTTW)* (Vol. 1, pp. 145-150). IEEE.

- [7] Mohapatra, H., & Rath, A. K. (2022). IoE based framework for smart agriculture. *Journal of ambient intelligence and humanized computing*, 13(1), 407-424.
- [8] Mohapatra, H., & Rath, A. K. (2021). A fault tolerant routing scheme for advanced metering infrastructure: an approach towards smart grid. *Cluster computing*, 24(3), 2193-2211.
- [9] Mohapatra, H., & Rath, A. K. (2021). An IoT based efficient multi-objective real-time smart parking system. *International journal of sensor networks*, 37(4), 219-232.
- [10] Mohapatra, H., & Rath, A. K. (2019). Fault tolerance through energy balanced cluster formation (EBCF) in WSN. In *Smart innovations in communication and computational sciences* (pp. 313-321). Springer, Singapore.
- [11] Panda, H., Mohapatra, H., & Rath, A. K. (2020). WSN-based water channelization: an approach of smart water. In *Smart cities – opportunities and challenges* (pp. 157-166). Springer, Singapore.
- [12] Mohapatra, H., & Rath, A. K. (2020). IoT-based smart water. *IoT technologies in smart cities: from sensors to big data, security and trust*, 63-82.
- [13] Mohapatra, H. (2021, September). Socio-technical challenges in the implementation of smart city. *2021 international conference on innovation and intelligence for informatics, computing, and technologies (3ICT)* (pp. 57-62). IEEE.
- [14] Mohapatra, H. (2020). Offline drone instrumentalized ambulance for emergency situations. *IAES international journal of robotics and automation*, 9(4), 251-255.
- [15] Mohapatra, H., & Rath, A. K. (2020). *Fundamentals of software engineering: designed to provide an insight into the software engineering concepts*. BPB Publications.
- [16] Mohapatra, H. (2021). *Designing of fault tolerant models for wireless sensor network* (Doctoral Dissertation, Veer Surendra Sai University of Technology). Retrieved from <http://hdl.handle.net/10603/333160>
- [17] Mohapatra, H., & Rath, A. K. (2020). Social distancing alarming through proximity sensors for COVID-19. *Easy chair*, 18. [https://wvw.easychair.org/publications/preprint\\_download/dMGk](https://wvw.easychair.org/publications/preprint_download/dMGk)
- [18] Mohapatra, H. (2021). *Smart city with wireless sensor network*. KDP.
- [19] Mohapatra, H. (2018). *C Programming: practice.cpp*. Independently Publisher.
- [20] Mohapatra, H., & Rath, A. K. (2020). *Smart bike wheel lock for public parking*. Application Number.
- [21] Mohapatra, H., & Rath, A. K. (2020). Advancing generation Z employability through new forms of learning: quality assurance and recognition of alternative credentials. DOI: [10.13140/RG.2.2.33463.06560](https://doi.org/10.13140/RG.2.2.33463.06560)
- [22] Mohapatra, H. (2009). *HCR using neural network* (PhD Dissertation, Biju Patnaik University of Technology). Retrieved from [https://www.academia.edu/29846341/HCR\\_English\\_using\\_Neural\\_Network](https://www.academia.edu/29846341/HCR_English_using_Neural_Network)
- [23] Mohapatra, H. (2019). *Ground level survey on sambalpur in the perspective of smart water* (No. 1918). Retrieved from <https://easychair.org/publications/preprint/CWpb>