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Smart home design with deep learning

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Abstract
Smart building is one of the new construction technologies in the field of architecture that takes control of energy consumption and in addition to creating comfort and security in the building to optimize energy consumption and reduce its waste and save time and maintenance costs. The building helps a lot. Such systems are in full interaction with the environment and reduce degradation and damage to the environment. Currently, about 04% of the total energy consumption in the country in the sector Home and building. Office of National Building Regulations, Topic 91 Energy Saving 9914 In order to reduce the costs of the construction industry and reduce energy consumption and optimize it, the performance of building management and automation systems is more significant. With this attitude, in order to save energy better and more rationally in the country, the need for smartening Buildings and monitoring of the precise control system in buildings will become more and more familiar. Therefore, in the present study, scientific solutions using deep learning and energy management .

Key words: Smart building , construction ,technologies, architecture

1. Introduction

Most of the energy sources we use today are non-renewable, meaning that one day it will finally run out. Will arrive. On the other hand, many of these sources cause irreparable damage to the environment; Like long effects Greenhouse duration and global warming caused by the use of fossil fuels. Also use these energy sources They are very expensive and costly and cause huge financial resources to be lost and have profound effects on the economies of communities. According to the mentioned factors Optimal energy consumption and reducing its intensity is one of the most important goals of responsible societies and governments. Countries
Like Japan, it has reduced energy consumption by 30% by popularizing the use of new energy sources such as solar energy. Became non-renewable in their own country. But even the consumption of the same amount of fossil energy due to its use in the productive sector of Japan It is justified according to its productivity and efficiency. Unfortunately in Iran due to the huge resources of fossil fuels and the cheap price

of this Energy Energy efficiency methods and consumption pattern modification are problematic. This is while a major part of the energy Consumption in Iran is consumed in the non-productive sector (domestic and commercial). This has led to an increase in energy consumption Iran is 17 times more than a country like Japan. Due to the development and advancement of new technologies, especially information and communication technologies

There are many voluntary and legal solutions to improve energy efficiency in various sectors and thus reduce the negative environmental effects.

Environment and sustainable economic growth are possible. This article focuses on information and communication technology as a productivity supporter Energy to introduce smart buildings by considering the main features of the building, including equipment and devices, insulation Deals with thermal, building automation systems as well as their urban planning indicators. Using the results of this research help Consumption of energy efficiency in non-productive buildings, reduction of destructive environmental effects, reduction of economic costs Imposed by the use of non-renewable energy, reducing the intensity of energy consumption, and the success of targeted subsidies in Iran doing. The present research is applied in terms of purpose and decision-making in terms of outcome. This research according to how Data collection is library type

2. Smart buildings

Intelligent Buildings are structures equipped with a strong communication infrastructure and can react continuously to changing environmental conditions; Adapted to them; Allow building occupants.

To use the available resources more effectively and increase their security and tranquility. Such buildings in Dynamic and cost-effective environmental vector by integrating the four main elements namely systems, structure, services, management and There is also a relationship between them. An intelligent building is an alliance between technology, buildings and energy management systems. This Buildings by reducing the number of building automation systems, reduce energy consumption in the building and increase efficiency The more the building helps [

2.1 Building systems

Systems include status display and control. In essence, the intelligent building management system, to the collection Hardware and software for the purpose of integrated monitoring and control of critical and vital parts of the building Are installed. The task of this complex is to continuously monitor different parts of the building and apply commands to them in such a way that the performance Different components of the building are balanced with each other and in optimal conditions and with the aim of reducing unwanted consumption and allocating energy resources only to Spaces during operation [3. [The main systems in the building that can be covered by BMS are: : Building lighting control system, using the central controller, the possibility of lighting control of section 5 of lighting systems Provides various building materials. Presence detection sensors, lighting the spaces in which the occupants of the building are present Provides. Also, at different times of the day, according to the amount of sunlight,

the light intensity is adjusted. Which reduces energy consumption [4. [7: Intelligent building Capable of managing alarm system, CCTV and fingerprint sensor 6 Security system Has. The main advantages are high accuracy, remote control, the ability to send SMS on mobile phones, space zoning
Covered And called the detection of smoke and flooding [5. [8 Doors, windows, curtains, blinds and awnings: By BMS system, these control equipments can be viewed and their status can be observed. And issue the necessary orders in this regard and can even use a fingerprint sensor or magnetic card in addition to Creating more security also enabled the possibility of classification and scheduling of access [6. [9 Cooling heating systems and air conditioning) (HVAC: In smart buildings, room temperatures can be adjusted to Separated and adjusted to the nature of the need. Also, making the system work conditional on the presence of the occupants in the building has a great effect on Will reduce energy consumption [5. [Audio-video system: Using BMS, you can select a central audio archive or select Select and execute various ceremonies of pre-defined modes or office equipment through this control system Appeared [6. [Video iPhone: With the iPhone ringing, the image of the references, if desired, only on the desired screen or on All screens are reflected. Also, when the residents are not present in the building, the image of the authorities and the time of the visit are recorded.
And you will be notified when you return [5. [Irrigation of flowers and plants, adjustment of fountains and artificial waterfalls through the control panel easily accessible 10 automatic irrigation systems They are in control. The smart building can also control, irrigate flowers and plants in the yard or indoors automatically Be in charge according to the predetermined schedule. For example, every evening if the grass moisture is lower than 33% of the irrigation system It is used automatically [5. [Control of swimming pool, sauna and jacuzzi facilities: in the smart building, turning on and determining the temperature of the sauna, finding out about When the sauna reaches the desired temperature, automatic cleaning of the pool or jacuzzi are all easily possible [5].

3. Smart buildings and energy efficiency

History has shown that the rate of development of new technologies is largely dependent on factors affecting the market. In proportion to the increase Increasing energy costs The process of development and advancement of technologies related to productivity and energy savings are also on the rise and is emerging as a very important factor in market valuation. However, energy pricing is a variable factor that can sometimes have a negative impact on the development of energy efficiency technologies by reducing it. But beside Factors such as environmental issues, non-renewability of renewable fuels, lack of easy access to renewable energy And many other factors to encourage researchers to sustain their efforts to develop and optimize energy optimization technologies In particular, it has encouraged communication and information technologies. Smart buildings as one of the new technologies Energy efficiency and optimization are trying to reduce the share of buildings in energy consumption.
Optimizing and saving energy consumption in the building means using energy with very high capability in the building Only when necessary and exactly as needed. Research

has shown the share of energy consuming sectors in Residential and office buildings are different from each other. So that American residential buildings in 2008 more than 40% of energy Their consumption was related to HVAC, while in the commercial buildings of this country, HVAC is only one third of the consumption. It has the energy of the building. Figures 1 and 2 show the difference between the share of energy consumption in residential and office buildings Show [11].

4. Conclusion

Statistics from the Oracle Market Institute (International Research Institute) show that fuel consumption in Iran is doubling every decade. While this growth rate in the world in one year is one to two percent and the rate of fuel consumption in the world doubles every 50 years it is possible. In the construction sector, Iran consumes 2.6 times more fuel per square meter than the world average. Some cities in the country are 4 times the global average consumption [15.] Given these conditions, the need for fundamental changes in policy and Energy consumption plans are strongly felt. In this regard, the subsidy targeting plan, which also includes energy subsidies Implemented by the Government of the Islamic Republic. To help the success of this project and curb excessive consumption and other Energy Reasonable in Iran Numerous solutions have been proposed by energy optimization experts and technology architects, including They are building intelligence using intelligent building management systems. In this article we tried buildings Intelligent as a powerful solution that can reduce more than 30% of energy consumption of buildings should be considered Intelligent building management system using the latest technology of ideal conditions with optimal energy consumption in Builds and the following four main advantages can be a decisive reason to use these buildings: Energy saving: Managing energy consumption in smart buildings has a significant impact on energy saving It has energy. Convenience: Using automation and undertaking some repetitive tasks as well as using a simple and multi-software Tab to control all equipment. Safety: In critical situations such as fire, theft, flooding, etc., the smart building announces warnings that It can play an important role in preventing or increasing the risk of failure. Flexibility: Flexibility in implementation and use is one of the hallmarks of smart technology. On the other hand, in this article, some of the disadvantages of smart buildings were mentioned, including the high cost of commissioning and The implementation of this category is buildings, but since the rate of return on investment in smart projects depends on the difference in consumption Energy before and after implementation is multiplied by the price of energy per day in addition to reducing the cost of repair and maintenance of facilities.

Therefore, the higher the price of energy carriers or the cost of maintenance and repairs, the shorter the payback period of the project. will be; Which has a faster return due to the elimination of subsidies. Finally, considering the uniqueness of the goals and functions of each building, and the difference between their short-term and long-term needs with.

It is recommended to pay attention to the type of smart building of each building and focus investment on more basic needs. So that today, in addition to smart buildings, green buildings And bright green buildings14 On

the agenda of many governments15 And the organizations involved.

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