THE CREATION HISTORY OF A SMART HOME SYSTEM

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The evolution of technology has ushered in an era where the concept of a smart home system has become increasingly prevalent. This innovative integration of various devices and appliances within a household, interconnected through the Internet of Things (IoT), promises unparalleled convenience, efficiency, and security for homeowners. The creation of a smart home system entails the synchronization of disparate components such as lighting, heating, security cameras, and entertainment systems into a cohesive network that can be controlled remotely via smartphones or other smart devices. Smart home is a high-tech system that allows you to fully automate all home processes. Within its framework, existing communications are combined into a single whole, and they are managed using artificial intelligence. It can be configured and programmed according to several scenarios, and the main task of a smart home is to ensure the safety and comfort of users [1].

The idea that a house should take over and act automatically and independently has been around for a long time. And in 1939 an article appeared in Popular Mechanics Magazine about "The Electric House of the Future". The author, George H. Bucher, describes a networked house in which doors would open automatically, guests would be personally greeted by the house via an intercom, and the lighting would change according to the needs of the occupants [2].

The origin of truly networked buildings can only be found in the 1960s. At that time, fault reporting systems were implemented in larger building units for the first time using conventional electrical installations.

Although it was never commercially sold, the ECHO IV, developed in 1966-1967, was the first smart device. This clever device could compute shopping lists, control the home's temperature and turn appliances on and off. The Honeywell Kitchen Computer, developed a year later,

could store recipes and assist with meal planning. Unfortunately, a few models were sold because the device required programming. At that time the average user could have hardly managed it.

The programmable logic controller (PLC) came onto the market in 1973 and has been used to control smart homes since then. It relies on a central unit that controls all of the connected peripherals. The foundation of a smart home system lies in the connectivity facilitated by IoT technology. Devices embedded with sensors and actuators communicate with each other and with a central hub, enabling seamless interaction and automation. For instance, smart thermostats can adjust temperature settings based on occupancy patterns detected by motion sensors, optimizing energy usage while maintaining comfort. Similarly, smart lighting systems can be programmed to adapt to natural light levels or user preferences, enhancing ambiance and reducing electricity consumption.

With the release of X10 in 1975, a communication protocol for home automation, the smart home came to life. X10 sends 120 kHz radio frequency bursts of digital information onto a home's existing electric wiring to programmable outlets or switches. These signals convey commands to corresponding devices, controlling how and when the devices operate. A transmitter could, for example, send a signal along the house's electric wiring, telling a device to turn on at a specific time [3].

In 2005, the home automation company Insteon introduced technology that combined electric wiring with wireless signals. Other protocols, including Zigbee and Z-Wave, have since emerged to counter the problems prone to X10.

The first smart TVs were released in 2007. They offered integrated internet-connected services, such as streaming and access to user-generated content. One of the primary benefits of a smart home system is the enhanced convenience it offers to homeowners. Through centralized control interfaces such as smartphone apps or voice-activated assistants, individuals can remotely monitor and manage various aspects of their home environment. Whether adjusting room temperatures, remotely accessing surveillance cameras, or setting up automated routines for household chores, the ability to control disparate devices from a single platform streamlines daily routines and enhances overall quality of life.

In 2011, the newly founded Nest Labs released its first smart product, the Nest Learning Thermostat. The company also created smart smoke and carbon monoxide detectors and security cameras. In 2014, Amazon

Echo, Amazon Alexa and Apple HomeKit were introduced, making a giant leap in voice-enabled smart devices. By 2010, using at-home wireless Internet to run your systems became more prevalent — it just made everything more manageable, especially with smart home thermostats! And since the technology was advancing, a new method of power data collection became available. This means smart homes could track how users operate the system and provide analytics. These analytics made it much easier to make changes to your smart home automation so it can run smoother! In 2016-2018, the arrival of smart speakers, such as Google Home, Google Nest, Apple HomePod and Sonos signaled a significant shift in how users interacted with smart home devices [3].

Today's smart homes are more about security and living greener. Obviously, the integration of smart security features reinforces the safety of residential premises. Real-time monitoring of entry points, coupled with motion-activated alerts and video surveillance, provides homeowners with invaluable peace of mind. In the event of suspicious activity or emergencies, immediate notifications can be sent to authorized users or emergency services, mitigating potential risks and facilitating prompt response measures. Our smart homes are sustainable, and they help ensure that our homes aren't expending unnecessary energy.

In conclusion, the creation of a smart home system represents a paradigm shift in residential living, offering unparalleled convenience, efficiency, and security to homeowners. By harnessing the power of IoT technology, disparate devices and appliances can be seamlessly interconnected, enabling centralized control and automation of various home functionalities.

References

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