

Design of Intelligent Water Cup for the elderly based on single Chip Microcomputer and Internet of things

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Abstract

With the development of science and technology in modern society, people pay more and more attention to the health of the elderly. For the elderly users, this paper puts forward a design of multi-function intelligent water cup based on single-chip microcomputer and Internet of things technology. Using the technology of single-chip microcomputer and Internet of things, this intelligent water cup can be connected to the mobile phone APP, with the functions of displaying temperature, heat preservation, storing medicine box, intelligent drinking water and medicine reminder and relatives, caring for the regularity and health of drinking water and taking medicine for the elderly, and bringing great convenience to the daily life of the elderly.

Keywords

Smart Water Cup, Single Chip, Internet of things.

1. Background and Significance

Since the beginning of the 21st century, the development of human economy and technology technology has gradually improved, and the requirements for quality of life are also increasingly high, and the health and nutrition problems of the body are increasingly attached to and pursue in modern people. It is well known that more than half of the human body is water, and the water drinking problem is an important factor affecting people's health. People's daily life is inseparable from the water cup, so the smart glass technology is an indispensable product in modern healthy life under the needs of people.

On the other hand, as the number of elderly population is growing, the health and health problems of the elderly are increasingly focused, and the demand for older products is also increasing. It is affected by the improvement of living standards and the popularity of Internet sensing technology, and intelligent products gradually enter the daily life of the elderly. It also provides new opportunities for the elderly merchandise manufacturing for the elderly.

A smart glass with multiple functions, strong practical, has good market space and application value. At the same time, it is in line with the concept of modern times, and always sounds healthy clocks, which is conducive to further improve living standards, which is conducive to the contribution of health care and elderly health career.

2. Various functional ideas

2.1. Temperature-related functions

The basic function of the insulation cup on the market is to insulate. This smart glass has the basic function of displaying temperature and insulation. It can see the temperature in the cup in the cup body. In addition, this smart glass of the design is interconnected with the mobile app. Open the mobile phone app, you can also see the real-time temperature, real-time water

volume, and changes in the specific period of time, water volume and temperature during a specific time period.

2.2. The function of reminding to drink

This smart glass design has a water reminder function, referring to authoritative best drinking time, use the Internet technology to develop App on the mobile phone, connected to the water cup, users can set the water time you can set it, to a certain point in time, mobile phone APP will Automatically pop up the delivery to remind users to drink water. The mobile phone app can also be combined with each person's own characteristics, combined with the season, exercise, etc., through the big data contrast, to set the user's own drinking standard.

When you drink water, the mobile app will automatically pop up the push to remind users to drink water. If the mobile app detects the design of the design for fifteen minutes, the water is not reduced, the user may forget the drinking or mobile phone app will pop up again and have a reminder that has passed the medicine but forget to drink water, while sending information Relatives associated with the elderly, to ensure the health of the elderly and drinking water health.

2.3. The function of reminding to take medicine

For patients with chronic diseases that require long-term medication, the smart glass design has the function of taking drug reminders. Users can set their own medicine time in mobile app, to take medicine, mobile app will automatically pop up and send to remind users Take medicine. If the mobile app detects the design of the design is more than 15 minutes, the water volume is not reduced, the user may forget the medicine, the mobile app will pop up again, but the user forgets medicine, and send information to the elderly The relatives associated with the people, to ensure the health of the elderly.

2.4. The function of kinship association

Based on the needs of the elderly group, we have also set up the relative association function, so that the children of the elderly can act as related relatives to check their parents' daily drinking water and medicine-related health status in real time. If the elderly are reminded by the time of taking medicine set in advance, the children will be reminded by the APP system if they still forget to take medicine or drink water. At this time, when children see the mobile phone APP to remind their parents to forget to take medicine or drink water at this time, they can bring the phone to their parents to remind them.

Even sometimes, some elderly patients with chronic diseases have the possibility of abandoning the trouble of taking medicine and are unwilling to take medicine. The design of intelligent water cup is beneficial to the health of the elderly through the supervision of their parents by taking medicine and drinking water. Help to care for the elderly, help to contact the relationship between the elderly and children, so as to promote the establishment of good family relations and social civilization.

3. Brief technical scheme

Single chip microcomputer is an integrated circuit chip, which is a central processor CPU, random memory RAM, read-only memory ROM, a variety of I / O ports, and interrupt systems, timer / counters, etc. Function (possibly include display driving circuit, pulse width modulation circuit, analog multi-channel converter, A / D converter and other circuitry) integrated into a small and perfect microcomputer system constituted on a piece of silicon, widely used in industrial control application.

The Internet of things, that is, the Internet of everything, is an important part of the new generation of information technology. The Internet of things is an extended and expanded

network based on the Internet. It combines all kinds of information sensing devices with the network to form a huge network to achieve the interconnection of people, machines and things at any time and any place.

We can use the Internet of Things technology to develop App on your mobile phone. With the water cup connected to Bluetooth, users can set the desired temperature, drink and take the drug time and related affiliate users through the mobile app yourself. The temperature sensor is a device for the water temperature information in the collection cup. Its action is to convert the temperature signal into an electrical signal. By collecting the water temperature, the sensor transmits the acquisition result to the microcontroller, the microcontroller passes the connection with the mobile Bluetooth, putting the data to the mobile phone. On the app, after calculation, the temperature of the water is clearly visual display on the mobile app. In addition, the temperature can also be visually displayed above, and there is a LCD on the cup body, and the sample temperature is displayed on the screen through the temperature sensor sample temperature. Click the screen, you can see the specific temperature of the cup inner water.

Through the pressure sensor, each time the water is over, the system will consider that people carry out drinking water, feedback to the pressure sensor, the pressure sensor begins, measuring the content of water in the cup after drinking water, and summarizes the data to mobile APP Feedback, mobile phone app to determine whether the user drinks water and calculates drinking water. The mobile phone app has been calculated by some specific algorithms. If the user can be inferred that the user forgetting drinking water or forgetting medicine, it can be reminded, and send a message to the associated relative while sending a message to the user.

4. Innovative features

When we designed the smart cup, we fully investigated and understood the existing brands and design concepts of the cup in the market, as well as our understanding of the needs of the elderly user groups. For the design of the intelligent cup, we will take a more intimate user experience as a starting point, taking full account of functionality as well as user experience and spiritual satisfaction. Combined with single-chip microcomputer technology, Internet of things and Bluetooth technology, a new concept of intelligent water cup is put forward, and the design of multi-functional intelligent water cup for the elderly is put forward.

5. Conclusion

With the rapid development of computer science and technology in the 21st century, the quality of people's living standards is getting higher and higher, and the demand for the practicality and convenience of living products is also increasing. The popularity of smart goods is getting wider and wider, and intelligent water cups are gradually entering people's field of vision.

Based on the technology of single-chip computer Internet of things, this paper proposes an intelligent thermal insulation cup connected with smart phone app, which is used to ensure the regularity and health of elderly users in drinking water and taking medicine. It has a variety of functions such as temperature display, heat preservation, storage of medicine boxes, intelligent water drinking and medicine reminders and relatives, which can care for the elderly and facilitate their daily lives.

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