Warning Sign with Air Purification

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Abstract: The purpose of this project is to solve the problem that the common warning signs in the prior art can only be used in the daytime, but they are easily blown down by the wind and have no waterproof function. They can be used at night and in foggy days, rainy days, dark days, sandstorms and other bad weather conditions. People can see the warning signs hundreds of meters away, thus effectively avoiding secondary accidents. The warning signs do not have the function of air purification, especially the current air smog is serious. When a car has a rear-end collision or a traffic accident, the warning signs placed on the roof or the tail of the car are not easy to see clearly, which easily causes traffic congestion, and the air quality near the car has a rear-end collision or a traffic accident cannot be seen, and the air quality of the whole environment cannot be purified.

Keywords: Warning Sign, Air Purification.

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1. INTRODUCTION

At present, warning signs are important safety tools for vehicle distribution when buying vehicles. Once a vehicle breaks down or has a traffic accident, other vehicles can be reminded to pay attention to avoidance by using the frequency flashing degree of warning signs to avoid secondary accidents. In the prior art, common warning signs can only be used during the day, but they are easy to be blown down by the wind and have no waterproof function. The lighting device can be used at night and in bad weather conditions such as foggy days, rainy days, gloomy days and sandstorms. People can see the warning signs at a distance of several hundred meters, effectively avoiding secondary accidents. The warning signs do not have the function of air purification, especially the current air smog is serious. When a car has a rear-end collision or a traffic accident, the warning signs placed on the roof or the tail of the car are not easy to see clearly, which is easy to cause traffic congestion and can not see the air quality near the rear-end collision or traffic accident.

When talking about the Internet of Things, we have to mention the Radio Frequency Identification (RFID), which has attracted much attention in the development of the Internet of Things. RFID is a simple wireless system consisting of an interrogator (or reader) and many transponders (or tags). Tags are composed of coupling elements and chips, each tag has a unique electronic code of extended entry, which is attached to an object to identify a target object. It transmits radio frequency information to a reader through an antenna, and a reader is a device for reading information. RFID technology enables objects to "speak". This gives the Internet of Things a feature, namely traceability. That is to say, people can grasp the exact location of objects and their surrounding environment at any time. According to the retail analyst of Sanford C. Bernstein Company, this feature brought by RFID in the

Internet of Things can save Wal-Mart 8.35 billion dollars every year, most of which is due to the labor cost saved because it does not need to manually check the incoming barcode. RFID has helped the retail industry to solve the two problems of goods out of stock and loss (products lost due to theft and supply chain disruption). Now, with theft alone, Wal-Mart has lost nearly 2 billion dollars a year. M2M, short for Machine-to-Machine/Man, is a networked application and service with intelligent interaction between machine terminals as the core. It will make the object realize intelligent control. M2M technology involves five important technical parts: machine, M2M hardware, communication network, middleware and application. Based on cloud computing platform and intelligent network, we can make decisions according to the data obtained by sensor networks, and change the behavior of objects for control and feedback. Take the intelligent parking lot as an example, when the vehicle enters or leaves the antenna communication area, the antenna performs bidirectional data exchange with the electronic identification card in the way of microwave communication, reads the relevant information of the vehicle from the electronic car card, reads the relevant information of the driver from the driver card, automatically recognizes the electronic car card and the driver card, judges whether the car card is valid and the legitimacy of the driver card, and checks that the lane control computer displays the license plate number and driver information corresponding to the electronic car card and the driver card one by one. The lane control computer automatically stores the relevant information of passing time, vehicle and driver into the database. The lane control computer judges whether it is a normal card, an unauthorized card, no card or an illegal card according to the read data, and accordingly makes corresponding responses and prompts. In addition, the elderly at home wear watches embedded with smart sensors, and children in other places can check whether their parents' blood pressure and heartbeat are stable at any time through their mobile phones; When the owner goes to work in an intelligent house, the sensors automatically close the water, electricity, doors and windows, and regularly send messages to the owner's mobile phone to report the safety situation.

This project is realized by the following technical scheme: a warning sign with air purification includes a shell, an air purifier, a main control circuit board, a liquid crystal display screen, sensors, vehicle-mounted power lines, air inlets and air outlets. There are several air inlets at the top of the shell, air purifiers in the shell, a main control circuit board below the air purifier, a liquid crystal display on the shell, a sensor below the right side of the shell, vehicle-mounted power lines on one side and air outlets on both sides of the shell.

The air purification device comprises an anion generator, an activated carbon filter, a grating and a fan, wherein the activated carbon filter is arranged on the left side of the anion generator, a fan is arranged on the right side of the anion generator, and a grating is arranged between the anion generator and the fan.

The shell comprises a front cover plate and a rear cover plate, and the rear cover plate is arranged behind the front cover plate.

There is a base at the bottom of the front cover plate, and a magnet is arranged below the base, which can be adsorbed on the top of the car roof or the tail of the car. The magnet is provided with a protective layer, which will not scratch the surface of the car body. Several LED warning lights are embedded on both sides of the front cover plate, and several buttons are arranged below the front cover plate, which are electrically connected with the main control circuit board.

The sensor includes temperature sensor, humidity sensor, VOC sensor, PM2.5 sensor and human body induction sensor. Humidity sensor is set on the right side of temperature sensor, VOC sensor is set on the right side of humidity sensor, PM2.5 sensor is set on the right side of VOC sensor, and human body sensing sensor is located above the LCD,The main control circuit board is connected with temperature sensor, humidity sensor, VOC sensor, PM2.5 sensor and human body induction sensor.

2. CLOUD COMPUTING

Cloud computing aims to integrate multiple computing entities with relatively low cost into a perfect system with powerful computing power through the network, and with the help of advanced business models, end users can get these powerful computing power services. If computing capacity is compared to power generation capacity, then changing from the old single-machine power generation mode to the centralized power supply mode of modern power plants is just like changing from the single-machine computing mode that everyone is used to to the cloud computing mode, while "cloud" is like a power plant, which has powerful computing capacity unmatched by a single machine. This means that computing power can also be circulated as a commodity, just like gas, water and electricity, which is easy to access and low in cost, so that users do not need to equip themselves. Different from power transmission through power grid, computing power is transmitted through various wired and wireless networks. Therefore, a core idea of cloud computing is to continuously improve the processing capacity of the cloud, reduce the processing burden of the user terminal, and finally simplify it into a simple input and output device, and enjoy the powerful computing and processing capacity of the cloud as needed. The sensing layer of the Internet of Things obtains a large amount of data information, which is transmitted through the network layer, put on a standard platform, and then processed by using high-performance cloud computing, so as to endow these data with intelligence, and finally transform them into useful information for end users.

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The main control circuit board is equipped with a network connection module, and the left side of the network connection module is provided with a communication protocol sending module.

The network connection module on the main control circuit board is connected with the network cloud server network, and the multimedia information and PM2.5 concentration value of the network cloud server are displayed through the LCD.

The on-board power line is DC on-board power line, and the voltage of DC on-board power line is 24 v. the DC on-board power line is connected to the vehicle cigarette lighter, which supplies power to the warning signs with air purification.

The LED warning light is a strobe led warning light.

Innovation

(1) The structure is simple, the magnet on the base is adsorbed on the roof, which is not easy to be blown by the wind, and has waterproof function, with good warning effect, low cost and small volume;

(2) One side of the shell is provided with an on-board power line, which is connected to the vehicle cigarette lighter, and the cigarette lighter supplies power to the warning board with air purification;

(3)LED warning lights display stroboscopic LED warning lights. When it rains or smog is serious, LED warning signs can be directly displayed on the roof or on the rear of the car;

(4) It is convenient for car owners to master the air quality in the environment at any time; The network connection module on the main control circuit board is connected with the network cloud server to display the multimedia information and PM2.5 concentration value of the network cloud server through the liquid crystal display screen.

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