Left alone Umbrella prevention system

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Abstract

In present-day Japan, there is a problem that a large number of umbrellas are thrown away as lost property. For example, it is a case that it is left with the umbrella standing on the umbrella stand. What I created in this research is a system to prevent the left umbrella. Attach the sensor to the umbrella stand and measure the time since the umbrella stand. When the time passes the set value, it notifies. And the owner of the umbrella stand receives the notification and processes the umbrella.

Keywords: the left umbrella.

1. Introduction

On this earth where we live, there are various environments depending on each place: hot areas, cold areas, dry areas or wet areas. Moreover, we can see different environments even in each region. The most familiar thing affecting the environment is "weather". Taking of as an example, there are four types of weather in general. They are "fine", "cloudy", "rain" and "snow". "Snow" is only seen in winter, but the other three can be seen throughout the year. Perhaps the most common is "Sunny". The theme in this paper is "Rain" among them. "Rain" is very familiar and essential in Japan. Actually, Japan is a country with a lot of rain, even in the world, an annual precipitation is the second largest in the world. In particular, it tends to rain a lot from summer to autumn, and against rain must be taken in a daily life. So what do you imagine as the most familiar measure? Perhaps many people think of an umbrella. In Japan, it can be bought cheaply at convenience stores and vending machines, and it is a very convenient item for Japanese

people. Perhaps everyone has at least one at home.

However an umbrella, has a bad point. People who have used an umbrella may have experience that is extremely fragile. In particular, it is a part of a rib. Originally, it can be said that it is not so strong in the wind because it is a tool to prevent rain. Furthermore, in Japan, an annoying weather phenomenon called a typhoon sometimes occur. I often see a broken umbrella being thrown away after a typhoon has passed. I also have an experience of breaking my umbrella in a strong wind. In addition, the point that it is easy to lose can be a disadvantage. I often see lost umbrellas on trains, shops and schools. As you can see, there are occasions when you feel that the umbrella is not important in Japan. Why is that? As I mentioned earlier, umbrellas are cheap and easy to buy. Therefore, many people have the recognition that umbrellas are not so valuable. Even if you throw it away or lose it, you can buy it easily again. We see a problem of "left umbrella" among the problems caused by such false senses is. A neglected umbrella is an umbrella that is unknown to the owner and left behind in the umbrella storage area. Also, things that are forgotten on trains and buses, and whose owner is unknown, are the same. According to the Japanese police, as of March 1, 2019, the ratio of umbrellas of all items found is 7.6%. At first glance it may seem like there aren't many. Umbrella ranks the fifth in the ranking, and there are certificates and clothing footwear at the top. However, certificates and clothing footwear are just a genre. The umbrella is at the top of the ranking, not by genre but by item. Also, there is one more noteworthy data.

That is the proportion of lost and found notices. As I mentioned earlier, the certificates are 134% and clothing and footwear are 10%. There are the figures that show the percentage of dropped items being searched. In contrast, the umbrella has only 1.7%. There are a lot of lost things, but

most of them are left undetected. These figures also show that umbrellas are not valued. So what are the problems that such umbrellas cause? It is a matter of a place. Stores and schools usually have a storage space to put an umbrella. The umbrellas which the owners left are remained there. That is a problem.

What is proposed is an apparatus and a system to prevent the left umbrella. This device is equipped with a surveillance system on a common umbrella stand. It is monitored by this system whether it is notified. If it has been left for a certain period of time, notify it. Thus, there is an aim to prevent leaving for a long time and to approach the solution of the problem.

2. Overview of Equipment

In order to produce this system, we start with the production of the device. The procedures of the operation in this system are:

- Monitor the status of an umbrella stand with a sensor.
- Sense an umbrella when it is put.
- Measure the time from the moment of sensing.
- When the umbrella is removed, the measurement is stopped and reset.
- Notify when there is an umbrella left even after a certain time has passed.

Fig. 1 shows a flowchart of the operation.

3. Test operation

Chapter 2 described the rough operation of the system. Let's practically move the system.

First, insert an umbrella into the specified hole. In this trial operation, the first hole of the four is used (Fig. 2). At this time, the sensor installed near the hole responds (Fig. 3). Here, a distance sensor is used and the one converted into numerical data by programming is taken out. The existence of the umbrella is confirmed by discriminating the magnitude of the data (Fig. 4). When an umbrella is inserted, the information is stored in the program. At the same time, green LED in the first number of the device lights up (Fig. 5). Next, the processing is performed in Arduino based on the information from the sensor. The time measurement starts when the umbrella is inserted and continues until the umbrella is removed. When a certain period of time passes before the umbrella is removed, the red LED turns on (Fig. 6). In this case, the notification is

made by lighting the red LED, but it is also possible to notify in a different way by changing the output of the red LED. In addition, the setting time until the notification can also be changed by an external input.

Fig. 1. Flowchart.

Fig. 2. An umbrella is inserted in the first hole.

Fig. 3. State of the sensor.

Fig. 4. Internal processing by Arduino.

Fig. 5. State of LED when umbrella was inserted.

Fig. 6. State of LED when a certain period of time passes.

4. Problems

I mentioned the problem of left umbrellas as the background on which I made this device and the system. However, it is only possible to discover the abandoned umbrella in the device or the system that has been made. There are some improvements to solve the problem. For example, there are "recording who put the umbrella", "automatically processing the umbrella when it is left", and "performing remote control".

5. Conclusions

In this research, we have been making the system for the purpose of decreasing abandoned umbrellas. It can be said that this study is an essential procedure to complete the perfect device and system, though it may not be possible to accomplish the purpose. By clearing the various issues mentioned in Chapter 4, it will be able to get closer to the desired ones. Also, this problem will improve not only by equipments and systems, but also by our ways of thinking. First of all, it is important to make lots of people know this issue. Then, it may be one of the ways to face the problem using the improved system.

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