Research on Creative Invention of Key Reminder Sensing Device

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***Abstract*—Forgetting your keys when you go out locks you out of the house and causes inconvenience. Therefore, the door and key chains are equipped with sensor buttons that respond to each other and open the door when you are about to go out. The door won't open (you need to open the door manually) if you forget to bring your keys. This acts as a reminder to carry your keys.**

Keywords—keys, reminder sensing device, sensor buttons.

I. INTRODUCTION

The creative idea is the result of the inconveniences caused by being locked out due to forgetting the keys when leaving home. Sensor buckles are mounted on the door and the key chain. Before going out, each must sense the other before the door can be opened. A person does not carry the keys, the mechanism of the door not opening would serve as a reminder. In special circumstances, one can also press the button on the door to manually open it.

The creative idea in this article applies existing technology. It is an easy-to-develop innovative product that is valuable due to its convenience and beneficial effect on people. Therefore, this article believes that it is necessary to discuss and design relevant details of this product. Therefore, the results are presented in international invention exhibitions and competitions for reference in subsequent research in related fields.

II. LITERATURE REVIEW

This article collected and organized information on relevant research topics at home and abroad. These were then read, summarized, and analyzed as the theoretical basis for the research. It was found that a considerable amount of domestic news reported behaviors such as climbing windows and walls due to left-at-home house keys that result in on-the-spot injuries and even deaths. These incidents deserve people's attention [1, 2, 3].

In the relevant literature, Some scholars have applied this technology to car key sensors to make technological reminders more convenient [5]. There are also smart designs that use face recognition to make life at home safer [4]. A related application of this technology can also be seen in the planning and design of human-machine interfaces. It is expected that they would give human beings a more convenient and safer lifestyle [6].

III. TEACHING AND LEARNING

The teacher and student first observed the living habits of the local people during the process of developing the creative idea. They found out that daily, as people go out, they often forget to bring their keys, thus locking themselves out of the house. Some of them even climb windows and walls to save money or other factors, resulting in serious accidents such as serious injuries or even death.

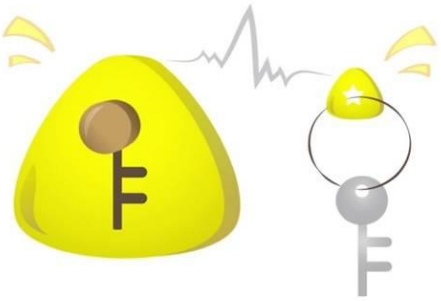
This article is based on qualitative research. The sensor device mounted on the door and the keychain was developed after discussion and corrections done by the teacher-student team. When the door and the keychain are close to each other, the door can be opened by mutual induction. If not, the door cannot be opened, which acts as a reminder. It can increase convenience when going out. However, in special circumstances, the button on the door can also be directly pressed to open it.

IV. DESIGN RESULTS

The creative idea in this article was made into a 1-minute short film (figure 1) and a poster (figure 2). It was entered in the Thailand International Invention Exhibition and Competition and won the bronze medal (figure 3). Secondly, to respond to international exchange activities, it is expected to participate in an international exhibition (figure 4) for the spreading of its creative ideas. The following are the creative results.

出門若忘記帶鑰匙，
If you forget to bring the key when going out,

新設計
New design



一款互相感應的裝置設計
Design of a mutual induction device.

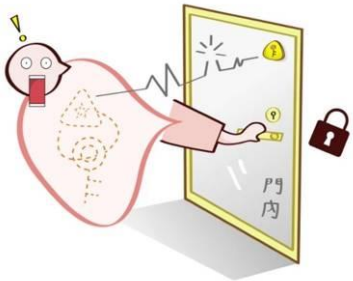
使用方式
How to use

因此，分別於門內、鑰匙圈內裝置感應扣，
Therefore, the sensor buckle is installed in the door and the key ring.

出門前，當鑰匙不管在衣服、包包、手上...
Before leaving, when the keys are not on clothes, bags, hands...

只要靠近門，
Just near the door,

兩者會發生感應，使門得以開啟。
the door and key chain are equipped with sensor buttons that respond to each other and opens the door when you are about to go out.



但若忘記攜帶鑰匙則無法開門
The door won't open if you forget to bring your key.

Fig. 1. *1-minute short film*

Fig. 2. *poster design*

Fig. 3. *bronze medal*

Fig. 4. *poster design*

V. CONCLUSIONS

This article is in view of the fact that people climb windows and walls because they forgot to bring their keys, which causes embarrassing accidents. Therefore, existing sensor technology is installed on the keychain and the door. The door can be opened when the two are in close proximity. If a person forgets to bring his key, he will be reminded by the door not opening.

Secondly, in special circumstances, the sensor on the door can also be manually pressed to directly open the door for the sake of safety and convenience at home. This article suggests that future related research can be followed up on this topic to extend the design for the improvement of the quality of human life.

REFERENCES

[1] https://www.youtube.com/watch?v=DlzpIZ_v4J0, 2020/02/15.

[2] https://www.youtube.com/watch?v=DQAtyn_kOOY, 2019/12/10.

[3] https://www.youtube.com/watch?v=VHwnR1ZtxW0, 2020/08/23.

[4] J. Patel, S. Anand, and R. Luthra, 2019, Image-Based Smart Surveillance and Remote Door Lock Switching System for Homes, Procedia Computer Science, 165, pp. 624-630.

[5] Y. Chen, J. Nakazawa, T. Yonezawa, and H. Tokuda, 2019, Cruisers: An automotive sensing platform for smart cities using door-to-door garbage collecting trucks, Ad Hoc Networks, 85 (15), March, pp. 32-45.

[6] Y. Zhan, P. R. Tadikamalla, J. A. Craft, J. Lu, J. Yuan, Z. Pei, and S. Li, 2019, Human reliability study on the door operation from the view of Deep Machine Learning, Future Generation Computer Systems, 99, pp. 143-153.