The Software Design of Intelligent Campus Safety Cabinet under Epidemic Situation

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Abstract. During the outbreak and future public health security, the safety cabinet industry gradually took to the forward momentum of development, the safe cabinet from the normal delivery tank through the software design to implement the "sell" face-to-face in universities. According to the survey, most students lose some take-out. Safety cabinets not only solve the problem of the safety delivery courier, also pay attention to public health in this era of successful implementation without personnel contact. Through the software design, the dining room also unified blocks with the school management, and students can order food through the canteen they want to go to, which provides a large number of different choices for students so that they won't get tired of eating in the same area. With the popularization of 5G in the future, the combination of "unmanned delivery mode" can reduce more risks in terms of public health and make people's lives more convenient.

1. Introduction

With the development of the Internet and the quickening pace of college students' life, express delivery and take-out food have become the daily routine of most college students. The intelligent express cabinet is set in the university town, and colleges and universities can share resources. This saves costs and improves the distribution efficiency, so as to maximize the interests of express enterprises, colleges and students. According to statistics, the pick-up points of express packages in most universities are far away from students' dormitories, so students usually have to run for a while to pick up the packages. In terms of takeout, 60% of the students said they had lost takeout. This reflects the problem of the integrity of the whole service process. In the survey of the express industry of college students, nearly 80% of the respondents use the way of door-to-door pick up by express companies, accounting for one fifth of the respondents think the speed of door-to-door pick up is slow. Another 20 percent of those surveyed had to send items to a delivery center by themselves. It can be seen from the survey that in the process of goods circulation of express service, the frequency of cargo damage and cargo difference is relatively high. Therefore, we should pay more attention to the security and convenience of goods in express delivery service. After interviewing and investigating students in colleges and universities, we studied a meal ordering and express delivery platform that connects to the safety cabinet of colleges and universities with WeChat small program, so as to ensure students' own safety and the safety of express delivery without reducing personnel contact.[7]
2. Research status
With the development of takeout delivery industry, takeout cabinets have gradually entered the market and entered the eyes of consumers. Takeout cabinets are to takeout delivery what delivery is to delivery cabinets. Especially in recent years, with the rapid development of takeout, the demand for intelligent devices to solve the end delivery in the takeout delivery industry is getting stronger and stronger. There are instances of takeout safety cabinets in society. By ordering food in the smart canteen and taking out cabinets, takeout food is delivered in an economical way, which not only improves the delivery efficiency but also carries out a comprehensive upgrade of college canteens. But at present, there are still many colleges and universities that do not participate in it. For businesses and schools, the whole data process of the smart canteen can be completed, and the store operation analysis can be carried out with the data at a clear point, so as to improve the level of catering service. There is no doubt that for the scenario of intensive takeout delivery, the takeout cabinet can effectively reduce the manpower in the delivery link and improve the delivery efficiency. The smart canteen's solution is to directly promote the intensification of takeout delivery. For colleges and universities, not only can the canteen merchants all go online to divert the dining flow of the offline canteens, so as to alleviate the situation of less canteen seats and long queues of students during the peak period of dining, but also the school can keep track of the operation situation of the online operation of the merchants at any time and effectively supervise the food safety of the merchants.[8]

3. The reasons for the development of campus safety cabinets after the epidemic
In new outbreaks, enterprise, the user psychology, government, and many other factors affect people to pay attention to public health, for the "distribution", "must" and so on many new words in the development of intelligent safety cabinet has a great effect, everyone in this kind of convenient and safe way with high expectations, and is a potential market in colleges and universities.

3.1. The role of user psychology
For users when taking the express delivery, there is the risk of being stolen, the ark of campus intelligent express can solve this problem. Some users' psychological impact is used to select "distribution" mode of services. [6]

3.2. The government's support provides a guarantee for the development of safety cabinets
After the epidemic, the State Council issued on October 18, 2020 the Suggestions on Production Practice of Postal Express Industry during the Prevention and Control of the Epidemics (Sixth Edition) were issued by the State Post Bureau in Article 16, which clearly proposed to promote the use of intelligent express boxes (letterbox) for mail delivery in order to reduce personnel contact. And Hou Yanbo, deputy director of the State Post Bureau's market supervision department, said at a press conference of the National Health Commission on January 30. In accordance with the requirements of the health department, the mail and express packages to and from Wuhan shall be received and delivered at fixed points, and the Courier shall contact the user by phone, and the delivery shall be given priority to the intelligent express box, so as to reduce the contact between personnel. With the strong support of the government, it provides a strong guarantee for the express cabinet industry.[4]

4. The software design

4.1. Introduction of system functions
Container points express ark, cupboard and sweep code control region. The classified area also greatly reduces the health hidden trouble. The same cabinet is divided into three medium mouth. So as long as it's not a big thing, all can be put in. Figure1 shows that the front end module is divided into: sell inside and outside the school order, take delivery, message, and my shop. The vendors inside and outside the school are aiming at the integration of each district canteen in universities and colleges so that each student can eat the food rather than eating nearby or contacting with many people, which
also plays a key role in this epidemic stage. Online shopping can save students after personnel distribution to the cabinet. All of these greatly save the time of students and can be fully used to learn. It also improves the students' quality of life and users can see it in the news since the use of the container, the order distribution personnel information and estimated delivery time. Credit points in the personal center can be seen, and people can enjoy a discount when reaching a certain point. The store is a module set up separately for the canteen of the cooperative school. People can see the food information of the store, the receipt of orders and the income of the store.[2]

![Figure 1. The front-end module](image1)

Figure 1. The front-end module

Figure 2 shows that the back end has four modules: user management, dynamic management, information audit and data analysis. User management is divided into ordinary users management, business management, user rights management, user roles and user level credit system management. User needs to bind their own WeChat ID permissions or mobile phone number to open the program for related services. Businesses need to upload their stores' information to carry out orders only after approval and distribution services.[1]

![Figure 2. The back-end module](image2)

Figure 2. The back-end module

4.2. Software advantages
Compared with other current hot delivery platforms, our software is only for college students. after the position location to the university. They would be to division management of the school canteen. Students can choose different areas inside the canteen in order before delivery to the dorm to receive the Courier ark. They only need to click the small program on a cell phone out of the operation to get delivery. Under the outbreak, this can greatly reduce personnel contact, and let students on a healthy diet reduce the risks of some take-out.
5. Realization of system function modules

5.1. Ordering function
Figure 3 shows that in the upper left corner, people can locate and select a gourmet restaurant near your location. Clicking the store within the recommended store as shown in Figure 3 can see the store information. People can also search the name of their favorite store in the search box. The recommended businesses can also be screened by distance and high praise. The screening interface is shown in Figure 3, and the recommended businesses can also be screened by their features and preferential activities.[3]

![Figure 3. Reservation function](image)

5.2. Personal-centered functions
Figure 4 shows that customers can check the wallet balance, coupons and points, favorites and other information in the Personal Center. As for the personal collection, people can query the information of the merchants that have collected after entering.[5]

![Figure 4. Personal center](image)

6. Conclusion
To sum up, the outbreak of public health under control requires each of us to cooperate, reduce the flow of people, go out wearing masks. Winter frozen food inspection is the obligation and
responsibility of everyone in our society. Campus safety cabinet can greatly reduce the risk of students' take-away points in cooperation with 5G network, the future safety cabinet can be interlinked. Safety cabinet has a very good prospect after the epidemic. In the connection and cooperation of network applets, safety cabinet industry can be combined with takeout and achieve the control effect between the epidemic and public health security in the future.

Acknowledgement
In the software design, the C language course learned in school helped a lot, and the professional teacher's guidance in the program can complete this small program. The teacher also gave us a lot of help in the topic opening. I also thank the teacher for the guidance and modification of our paper, which played a great role in helping the completion of the paper.

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