

SMART MAILBOX WITH SECURITY SYSTEM

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ABSTRACT

The limitation on the usage of traditional mailboxes is that the recipients are not always at home to receive the parcels and confirm the delivery. Sometimes the undelivered consignments remain stored at the post office or other contact delivery point which cause great inconveniences to the receivers. In addition, the current mailboxes have less security features that it may have a high probability of missing. This project focuses on improving the current mailbox functions so that it can help the receivers and courier services to have a more secure and efficient parcel receiving system. This product consists of a Smart IOT Technology system, camera and servomotor that will provide a secure system for the users. The servomotor will be used to lock or open the door of the smart mailbox through mobile phone by using a Blynk application. The camera acts as a monitoring system and can be accessed by the receivers through their mobile phones. The mailbox has a push button that allows the courier service man to push and send the notification to the receiver, so that the receiver can open the lock of SMIX and allow the delivery man to safely put the parcels inside the smart mailbox.

Keywords: smart postal mailbox, Internet of Things, Blynk application, secured system, safe delivery

1. INTRODUCTION

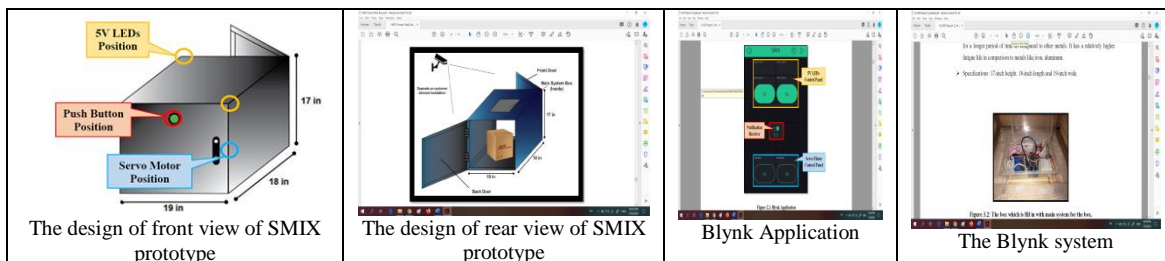
The use of technology is one of the most important innovations that makes lives easier and more comfortable as well as more productive and efficient. The digital transformation processes have made online shopping platforms very popular for both the sellers and the buyers. The popularity is clearly seen during the recent movement control period due to COVID19 (Lim, 2020). Many users are using the technology to shop online as they will have more choices on the things that they want to buy, and at a better and reasonable price than buying at the stores. The bought items or packages are usually delivered through courier services to the customers. To ease the work and tracking of the parcels, courier services companies usually use tracking numbers to check the status of the parcels at every stage of the delivery process. The customers also can trace the parcels by referring to the tracking number given to predict when the parcel's arrival dates. This has made on-line transactions more efficient and convenient. However, the problem arises when the courier services want to deliver the parcel to the customers but the customers are not available to receive their parcels (Turska & Madlenakova, 2019 ;). On the customer side, they also face some problems such as missing or broken items in the parcels. Thus, this project focuses on improving the current mailbox functions so that it can help the receivers and courier services to have a more secure and efficient parcel receiving system.

1.1. Problem Statement

Mailbox is a place into which the parcels are delivered. The traditional mailboxes are usually mounted on a post at the entrance to a person's residence. The major concern on the usage of this type of traditional mailbox is that the recipients are not always at home to receive the parcels. So sometimes the consignments remain stored at the post office or other contact delivery points. In addition, the current mailboxes do not have any technology enhanced elements to solve the problems faced by the recipients and have less security features. Letters or parcels put into the mailbox may have a high probability of missing. Thus, this project focuses on how to improve the current mailbox functions so that it can help the users and courier services to have a more secure and efficient parcel receiving system.

2. MATERIAL AND METHOD

We have developed the SMIX (Smart Mailbox) with Security System where this product is expected to solve the problem faced by the online shopper as well as the courier services companies. It comes with a strong security feature that ensures the parcels are received and kept in a good condition. This product consists of a Smart IOT Technology system (Xavie & Olaf, 2013), camera and servomotor that will provide a secure system for the users and prevent the parcel from being stolen or damaged. The servomotor will be used to lock or open the door of the smart mailbox through mobile phone by using a Blynk application. For the camera, it acts as a monitoring system for this product that can be accessed by the user through their mobile phone. It has a push button that will allow the courier service man to push and send the notification to the user, so that the user can open the lock of SMIX and allow the delivery man to safely put the parcels inside the smart mailbox.



3. CONCLUSION AND SUGGESTION FOR FUTURE DEVELOPMENT

The SMIX is designed through a well thought Research and Development (R&D) processes. The research idea was aimed to solve the problem of unavailable recipient, losing or broken items during the courier delivery service. At the product design stage, we have focused on how to make a product with practical architecture and aesthetic features that satisfies the market needs. Extra attention was paid to ensure the basic product performance criteria such as the main capabilities of the product, the consistency of performance and dependability of the product, the risk of injury or harm when customers use or engage with the product, the useful life of the product and the extra characteristics that make this product stands out from the crowd are met. All of these criteria have been discussed thoroughly during the design stage (Bhuiyan, 2011). A concept survey was conducted by getting the feedback from our potential customers about the idea, design, and acceptance of our product. Our product was found to have very high acceptance rate. Other than being a smart mailbox, this product also can be used as a safety box that requires the same concept as SMIX which allows the user to safely keep their expensive stuff such as jewellery, or any other valuable items and prevent it from any unwanted incidents such as theft or robbery.

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