

# Smart Freight Door: Automated Package Delivery Accepting System

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## Abstract

Present lifestyle of the people makes them to get things done in easier and smart way. People tend more towards the comfortable and luxurious lifestyle. As the result, they are more comfortable of purchasing goods online rather than personally visiting and buying goods. This increases the marketing of online goods purchased. The client puts in a request of required product in any electronic-retailer (e-retailer) site. On the confirmation of the request is affirmed the e-retailer will send the product detail and shipping data of the package to the client, the client thus can check this detail, and the client will probably securely get his bundle regardless of whether he is present anyplace on the planet. Smart Freight Box (SFB) is designed using IoT interface, which is to be fit in house window which is accessible for client as well as customer. The Box is designed with two doors each present on opposite side which is accessible using IoT platform, to provide security for the product till collected by the right person. Camera is installed inside the SFB to provide safety measures for being cheated in certain conditions. The focus here is to place the product in the box, to be collected by the right person without any damage or being stolen.

*Keywords: Smart Freight, LCD, IOT, cloud computing, Raspberry Pi.*

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## I. INTRODUCTION

The online shoppers suffer delivery problems as their products are out with the confirmation for delivery. Once the product verified is taken to be given at the mentions address, the deliveryman places product near the home or at surrounding neighbors. This results the issues faced by the receiver when he needs to collect the parcel. This paper presents brief information on the problems facing by the receiver during collection of his parcel. It is analyzed that on average two out of every three-person face problem related to this issue. This Research study showed that more than one in three worldwide online shoppers have had packages stolen from their doorsteps. To develop an IoT based smart door flap to cut down on the number of missed deliveries and reduce the problem of stolen packages and notify and accept packages customer/user unavailable at home.

e existing online shopping system, during the product delivery when the customer is unavailable at the home, the products are returned without delivery also product can be delivered to the neighbor's or kept near the home; there is a chance of being stolen or being damaged due to external weather conditions. To overcome these problems with the booming technology we develop a Smart IoT based "Automated Package Delivery Accepting System - Smart Freight door" system. The proposed Smart Freight Box system the user needs a smart box which is interfaced with the Internet of Things. The system consists of door solenoid which is fitted to the doors present which can be opened and closed by giving power supply to the solenoid using mobile platform. An IP wireless camera is placed inside which aims to provide live streaming to the authorized person to notice the delivery of product. The system implemented using raspberry pi 3B+, Camera module, solenoid lock.

## II. LITERATURE REVIEW

The study on similar issues in the Finland [2] provides the concept of last mile parcel being delivered to the right person. This paper specifies the issues and difficulties undergone by the customer as the parcel is being delivered, the electronic retailer need to provide doorstep product delivery. If in case finds unavailability of customer the delivery man needs to return the product which is totally waste of time and travelling expenses, as the result the retailer must bear the loss. A suitable measure needs to be taken to minimize the issue related in collecting the parcel. This automatic speech recognition process is used in most voice-controlled systems. The voice-controlled

wheelchair for the physically challenged was proposed in 2002 [7]. This paper had portrayed an investigation that thought about the presentation of abled and impaired individuals utilizing voice control to work a force wheelchair both with and without route help, where the navigations were assisted by the sensors to identify and avoid obstacles in the wheelchair's path [7].

The online shoppers suffer delivery problems [4] as their products are out with the confirmation for delivery. Once the product verified is taken to be given at the mentions address, the deliveryman places product near the home or at surrounding neighbors. This results the issues faced by the receiver when he needs to collect the parcel. This paper presents brief information on the problems facing by the receiver during collection of his parcel. It is analyzed that on average two out of every three-person face problem related to this issue.

Global Parcel Delivery Marketing [5] conditions need to be examined about the present economic situations in a totally unique kind of economy. This analysis gives the information related on how the present marketing conditions of the products are carried out. The issues present evidence of analyzing the next future marketing conditions on exchange of products from different nation and its growth based on previous year data analysis. This helps to improve the global exchange of goods as the result of this in increasing in marketing condition of online delivered goods.

### III. PROPOSED ARCHITECTURE

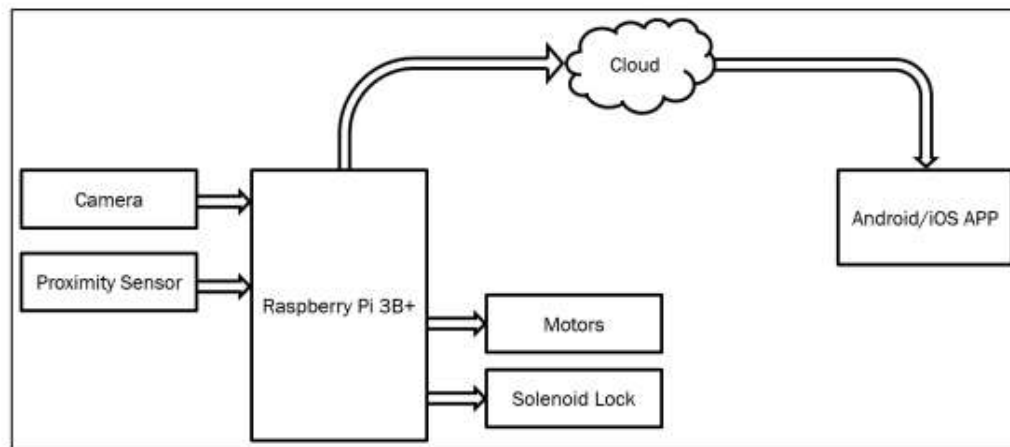


Figure 1 System Architecture

The proposed “Smart Freight Box” system is containing the three phases of implementation,

- Pre-Delivery phase
- Delivery phase
- Post-delivery phase

Each one of the above mentioned three phases of implementation of Smart Freight Box is explained in detail below

**Pre-Delivery phase** - The person orders the required products need to be purchased from any electronic-retailer website. When the order placed is confirmed the electronic retailer will send the parcel information as well complete data of the parcel to the customer, the customer in turn can check this detail sent by the retailer and he will be able to safely receive his parcel by confirming when the product arrives for delivery.

**Delivery phase** - The deliveryman notifies the receiver that the product placed order is out for delivery. The receiver will get the confirmation of delivery and details about the deliveryman on the day of delivery. The deliveryman arrives at the address specified by the customer. If he finds no one in the home, he calls the customer and informs about the product. Once the customer verifies the product through the call, he opens the front door of the SFB using

mobile platform. Post-delivery phase - The delivery person must place the parcel in this SFB for the authorized person of the box to collect. As the front door opens the camera which is turned ON records every action that takes place and the captured footage is stored in the device for further reference in case of any issues from customer or electronic retailer.

**In the post-delivery stage:** once the parcel is delivered it is kept in the box, in case of another delivery of product the parcel which is already present inside the box is moved in ward by turning ON the DC motor which relates to the conveyor belt to rotate by opening the back door. As the parcel is moved inside the home, another product can be able to receive using the same box. The main aim of this is to provide safety to the product.

### Hardware Setup

- The proposed Smart Freight Box system the user needs a smart box which is interfaced with the Internet of Things.
- The system consists of door solenoid which is fitted to the doors present which can be opened and closed by giving power supply to the solenoid using mobile platform.
- A camera module is placed inside which aims to detect QR Code and send message to the authorized person to notice the delivery of product.
- The system implemented using raspberry pi 3B+, Camera module, solenoid lock.

### IV. CONCLUSION

The proposed system is designed to overcome from the issues or problems being faced due to online shopping. The proposed works aims in designing a system which collects the parcel without the presence of the customer. The main aim of this system is to provide safety and security to the parcel till it is collected by the authorized person. There is a high-definition IP wireless camera installed inside the box to record every action that takes place inside the box, this help to know what is happening when the parcel is being delivered. Live streaming using camera is implemented to the authorized registered mobile which also helps to watch what is happening during the delivery process.

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