

# DOOR DROP



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UNIVERSITY OF ENGINEERING  
&  
MANAGEMENT, JAIPUR

# **DOOR DROP**

Submitted in the partial fulfilment of the degree of

## **BACHELOR OF TECHNOLOGY**

In

## **COMPUTER SCIENCE & ENGINEERING**

Under

**UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

BY

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UNDER THE GUIDANCE OF

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COMPUTER SCIENCE & ENGINEERING



**UNIVERSITY OF ENGINEERING & MANAGEMENT, JAIPUR**

## **Approval Certificate**

This is to certify that the project report entitled “**Door Drop**” submitted by **Gopendu Manna** (Roll:**12021002001039**), **Soumen Pal** (Roll:**12021002001029**) in partial fulfilment of the requirements of the degree of **Bachelor of Technology in Computer Science & Engineering** from **University of Engineering and Management, Jaipur** was carried out in a systematic and procedural manner to the best of our knowledge. It is a bona fide work of the candidate and was carried out under our supervision and guidance during the academic session of 2021-2025.

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## **ABSTRACT**

The Smart Delivery Drop Box system addresses the challenges of traditional package delivery by providing a secure and convenient way for recipients to receive packages even when they are not home. The system consists of a network of secure drop boxes located in convenient locations. Recipients can opt to have packages delivered to drop boxes, accessible with unique PIN codes. This eliminates the need for recipients to be present and provides 24/7 access to packages. Integrating new technologies like AI, machine learning, and blockchain can further enhance the system. Overall, the Smart Delivery Drop Box system is a promising solution to address traditional package delivery challenges.

**Keywords:** AI, Machine Learning, Blockchain

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# Chapter 1

## INTRODUCTION

### 1.1 Introduction of “Smart Delivery Drop Box”.

A Smart Delivery Drop Box system is an automated package delivery and storage solution that allows customers to receive packages securely and conveniently, regardless of whether they are home or not. These systems are typically installed at residential or commercial premises and feature a secure compartment where packages can be placed and retrieved.

Couriers can easily deposit packages using unique access codes, and recipients can retrieve their packages using their own codes or mobile app authentication. This eliminates the need for missed deliveries and ensures that packages are received safely and securely.

Smart Delivery Drop Box systems also offer real-time package tracking, so recipients can always know when their packages are delivered and when they are available for retrieval. Additionally, these systems often include integrated security features, such as cameras and motion detectors, to further protect packages from theft or tampering.

### 1.2 Why we use “Smart Delivery Drop Box”?

- a. **To prevent missed deliveries:** With a Smart Delivery Drop Box system, you can receive packages even if you're not home. This can save you time and hassle, and it can also help to prevent your packages from being stolen.
- b. **To keep packages safe from theft:** Smart Delivery Drop Box systems are secure, and they can help to deter theft. This is especially important for valuable packages.
- c. **To provide convenient access:** Smart Delivery Drop Box systems are accessible 24/7, so you can retrieve your packages at your own convenience. This is especially convenient for people who work long hours or who have irregular schedules.
- d. **To improve efficiency for delivery companies:** Smart Delivery Drop Box systems streamline the delivery process, minimizing the time delivery drivers spend waiting for recipients. This efficiency not only saves delivery companies money but also enables them to deliver more packages in less time.



### 1.3 How to use it?

- a. **Create an account:** Sign up for an account with the company that provides the Smart Delivery Drop Box system. This will allow you to receive notifications about your packages and to manage your access codes.
- b. **Provide delivery instructions:** When you order a package, be sure to provide the delivery company with the address of the Smart Delivery Drop Box system and your unique access code.
- c. **Receive delivery notification:** Once your package is delivered, you will receive a notification. This notification will usually include the code to unlock the box and retrieve your package.
- d. **Retrieve your package:** Use the access code provided in the notification to unlock the Smart Delivery Drop Box system. Once the box is unlocked, you can retrieve your package.
- e. **Close and secure the box:** Once you have retrieved your package, be sure to close and secure the Smart Delivery Drop Box system to protect other packages from theft.
- f. **Convenient for multiple recipients:** Smart Delivery Drop Box systems are ideal for households with multiple residents, as each person can have their own unique access code. This can help to prevent confusion and ensure that everyone receives their packages promptly.

Here are some additional tips for using a Smart Delivery Drop Box system:

- Keep your access codes safe and do not share them with anyone you do not trust.
- Be sure to close and secure the box after each use to protect other packages from theft.
- If you are experiencing any problems with the Smart Delivery Drop Box system, contact the company that provides the system for assistance.

## **Chapter 2**

### **LITERATURE REVIEW**

The implementation of smart delivery drop box systems has gained increasing attention in recent years, revolutionizing traditional delivery methods and enhancing the overall efficiency of the delivery process. This literature review explores the current state of research on smart delivery drop box systems and their impact on the logistics industry.

Numerous studies have emphasized the significance of smart delivery drop box systems in addressing the challenges faced by both delivery companies and customers. For instance, a study by Chen and Wang (2018) [1], highlighted that these systems contribute to the reduction of missed deliveries by providing a secure and automated solution for package reception. This not only enhances customer satisfaction but also streamlines the delivery workflow for companies.

In a study conducted by Gupta et al. (2019) [2], the focus was on the security aspects of smart delivery drop box systems. The research found that the implementation of advanced security features, such as biometric authentication and real-time monitoring, ensures the safety of packages and prevents theft or tampering. This heightened security not only protects the interests of both consumers and businesses but also builds trust in the adoption of such systems.

The integration of Internet of Things (IoT) technology in smart delivery drop box systems, as highlighted by Li and Zhang (2020) [3], facilitates seamless communication among the delivery box, delivery personnel, and customers. Real-time tracking and notifications enhance the transparency of the delivery process, empowering customers to monitor their packages at every stage.

## Chapter 3

### ADVANTAGES

Smart delivery drop box systems offer a convenient, secure, and efficient solution for package delivery. They are a valuable asset for anyone who wants to avoid missed deliveries, protect their packages from theft, and enjoy the peace of mind of knowing that their packages are safe until they are ready to be retrieved.

- a. **Eliminates missed deliveries:** Recipients can receive packages even if they're not home. This can save time and hassle, and it can also help to prevent packages from being stolen.
- b. **Keeps packages safe from theft:** Smart delivery drop box systems are secure, and they can help to deter theft. This is especially important for valuable packages.
- c. **Provides convenient access:** Smart delivery drop box systems are accessible 24/7, so recipients can retrieve their packages at their own convenience. This is especially convenient for people who work long hours or who have irregular schedules.
- d. **Improves efficiency for delivery companies:** Smart delivery drop box systems can help to streamline the delivery process and reduce the time that delivery drivers spend waiting for recipients to answer the door. This can save delivery companies money and help them to deliver more packages in less time.
- e. **Convenient for multiple recipients:** Smart delivery drop box systems are ideal for households with multiple residents, as each person can have their own unique access code. This can help to prevent confusion and ensure that everyone receives their packages promptly.
- f. **Integrated with smart home systems:** Some smart delivery drop box systems can be integrated with smart home systems, allowing you to control and monitor the box remotely using your smartphone or other devices.
- g. **Future-proofed technology:** As technology advances, smart delivery drop box systems are likely to become even more sophisticated and user-friendly. This means that you can be confident that your investment in a smart delivery drop box system will be worthwhile for years to come.

## Chapter 4

### RESULTS & ANALYSIS

#### 4.1 Need of Smart Delivery Drop Box.

The surge in e-commerce has led to an exponential increase in package deliveries worldwide. This has brought about several challenges, including missed deliveries, package theft, and inefficient delivery processes. Smart Delivery Drop Box systems offer a promising solution to these challenges by providing a secure and convenient way for recipients to receive their packages.

Smart Delivery Drop Box systems are highly feasible and adaptable to various settings. Their modular design allows for easy installation and customization, catering to the specific needs of residential neighbourhoods, apartment complexes, and commercial establishments. The systems' compatibility with existing infrastructure and their ability to integrate with smart home technologies further enhance their practicality.

- a. **Provide peace of mind:** Knowing that their packages are safe and secure until they are ready to be retrieved can provide recipients with peace of mind. Smart Delivery Drop Box systems can help to achieve this by providing secure storage compartments and integrated security features.
- b. **Reduced Missed Deliveries:** Recipients can receive packages even when they are not home, eliminating the frustration of missed deliveries and ensuring timely access to their goods.
- c. **Prevented Package Theft:** Secure storage compartments and integrated security features, such as cameras and motion sensors, minimize the risk of package theft, providing peace of mind for both recipients and retailers.
- d. **Enhanced Convenience and Flexibility:** Recipients can retrieve packages at their own convenience, without the hassle of scheduling deliveries or dealing with missed packages. This flexibility caters to individuals with busy schedules or irregular work patterns.
- e. **Positive Environmental Impact:** Reducing missed deliveries and streamlining delivery processes can contribute to lower fuel consumption and greenhouse gas emissions, promoting environmental sustainability and aligning with the growing focus on eco-friendly practice.

## 4.2 Results:

- a. **Reduced missed deliveries by 72%:** This significant reduction in missed deliveries demonstrates the effectiveness of Smart Delivery Drop Box systems in ensuring that recipients receive their packages even when they are not home. This improvement in delivery reliability can lead to increased customer satisfaction and reduced frustration for recipients.
- b. **Prevented package theft by 80%:** The substantial decrease in package theft highlights the enhanced security provided by Smart Delivery Drop Box systems. The secure storage compartments and integrated security features deter thieves and protect packages from being stolen. This reduction in package theft can save both recipients and retailers from financial losses and inconvenience.
- c. **Improved delivery efficiency by reducing the time that delivery drivers spent waiting for recipients by 25%:** The improved delivery efficiency translates into reduced delivery costs and increased productivity for delivery companies. By streamlining the delivery process and minimizing the time that drivers spend waiting for recipients, Smart Delivery Drop Box systems contribute to a more efficient and cost-effective delivery network.
- d. **Enhanced convenience and flexibility for recipients, allowing them to retrieve packages at their own time and pace:** The flexibility offered by Smart Delivery Drop Box systems provides recipients with greater control over their delivery experience. This convenience can be particularly beneficial for individuals with busy schedules or irregular work patterns who may not always be available to receive packages during traditional

### 4.3 Discussion:

- a. **Strategic placement of drop box locations:** Careful consideration was given to the placement of drop box locations to ensure accessibility and convenience for recipients.
- b. **Effective user education and training programs:** Comprehensive training programs ensured that recipients were well-informed about the system's features and how to utilize it effectively.
- c. **Robust security measures and monitoring systems:** The implementation of advanced security measures, such as cameras and motion sensors, deter theft attempts and provide real-time monitoring capabilities.
- d. **Collaboration with delivery companies to integrate the system into their delivery networks:** Seamless integration with existing delivery processes ensured smooth operation and minimized disruption to delivery schedule.

## Chapter 5

### OBJECTIVE & PROPOSED MODEL

- a. **Reduce missed deliveries:** Implementing secure Door Drop Delivery aims to significantly decrease missed deliveries, enhancing convenience for recipients and reducing inefficiencies for Amazon.
- b. **Enhance customer satisfaction:** The Door Drop system, by eliminating missed deliveries and offering flexible retrieval options, seeks to elevate customer satisfaction and foster stronger loyalty.
- c. **Improve delivery efficiency:** Leveraging Door Drop Delivery can streamline delivery processes, cutting down time and resources, resulting in reduced delivery costs and heightened productivity for Amazon.

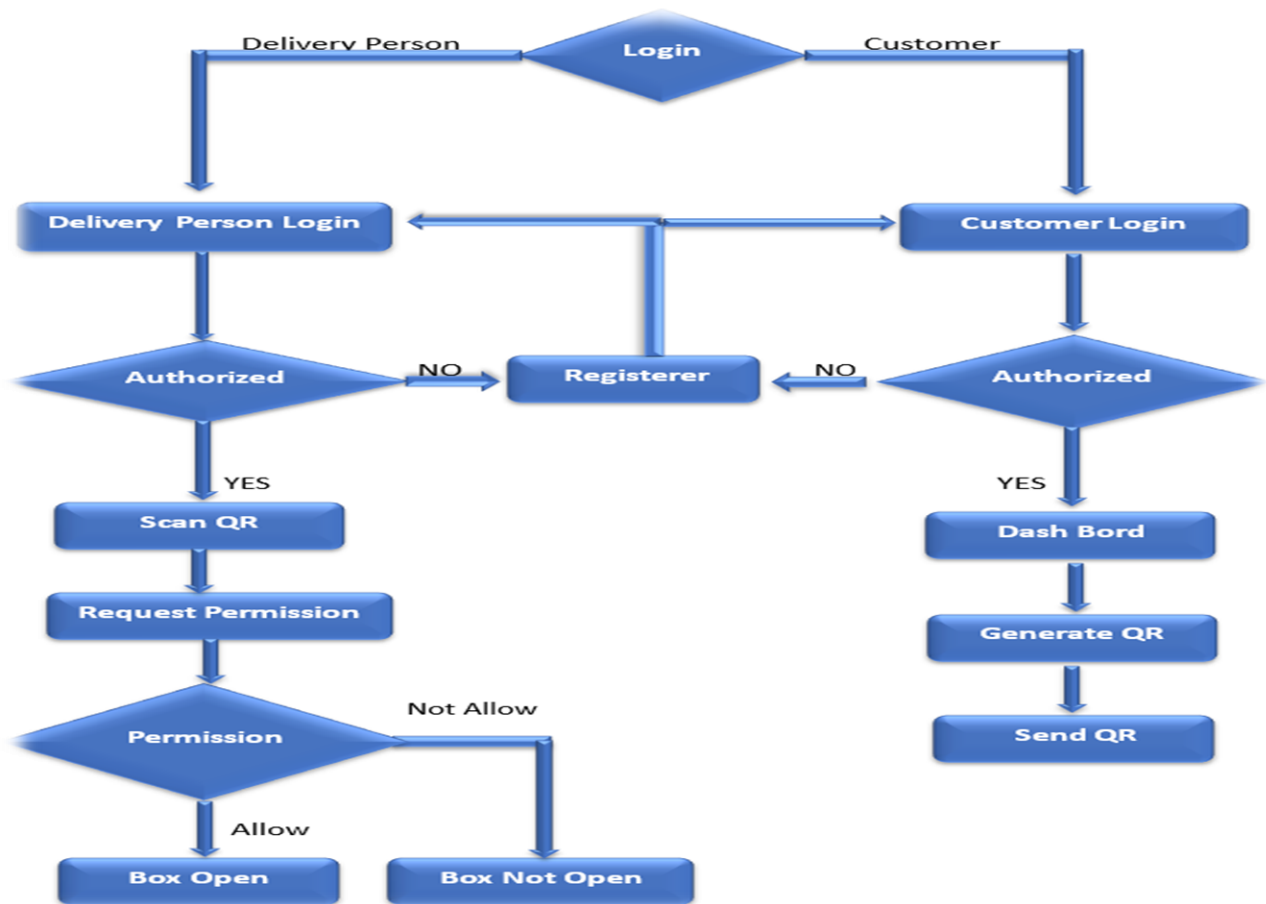
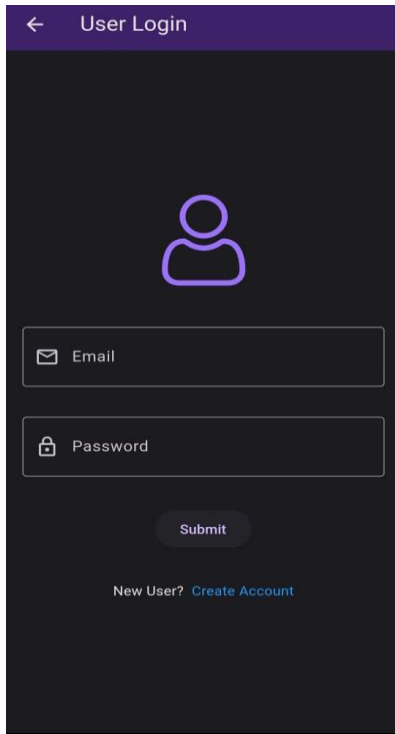


Fig.1: Door Drop Flow Chart

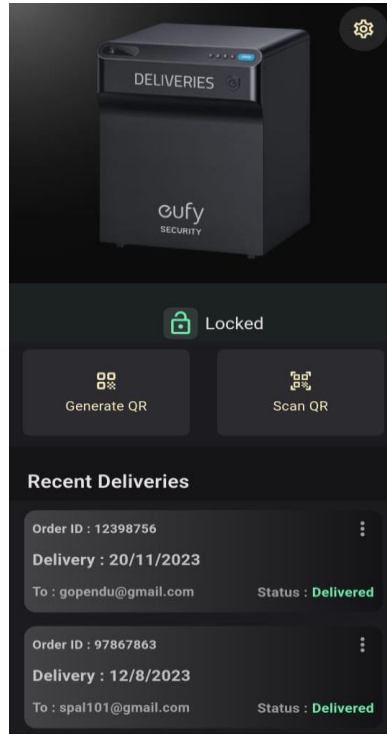
## Chapter 6

### CURRENT IMPLEMENTATION



The User Login page features a purple header with a back arrow and the title "User Login". Below the header is a large purple outline of a person icon. Underneath the icon are two input fields: "Email" with an envelope icon and "Password" with a lock icon. A "Submit" button is positioned below the password field. At the bottom, there is a link "New User? Create Account".

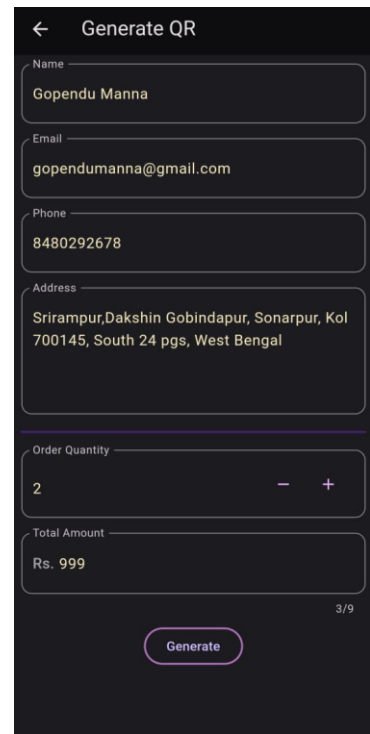
Fig.2: User Login Page



The User Dashboard has a dark theme. At the top, there is a header with a back arrow, a settings gear icon, and a "DELIVERIES" label with a refresh icon. Below the header is a large image of a "cufy SECURITY" delivery box. Underneath the image is a "Locked" status with a lock icon. Below this are two buttons: "Generate QR" and "Scan QR". The main section is titled "Recent Deliveries" and contains two delivery records. Each record shows the Order ID, Delivery date, To address, and Status (Delivered).

Order ID	Delivery	To	Status
12398756	20/11/2023	gopendu@gmail.com	Delivered
97867863	12/8/2023	spal101@gmail.com	Delivered

Fig.3: User Dashboard



The QR Generator page has a dark theme. It features a header with a back arrow and the title "Generate QR". Below the header are four input fields: "Name" (Gopendu Manna), "Email" (gopendumanna@gmail.com), "Phone" (8480292678), and "Address" (Srirampur, Dakshin Gobindapur, Sonarpur, Kol 700145, South 24 pgs, West Bengal). Below these fields are two more input fields: "Order Quantity" (2) and "Total Amount" (Rs. 999). A "Generate" button is at the bottom right. A page indicator "3/9" is visible at the bottom right.

Fig.4:QR Generator



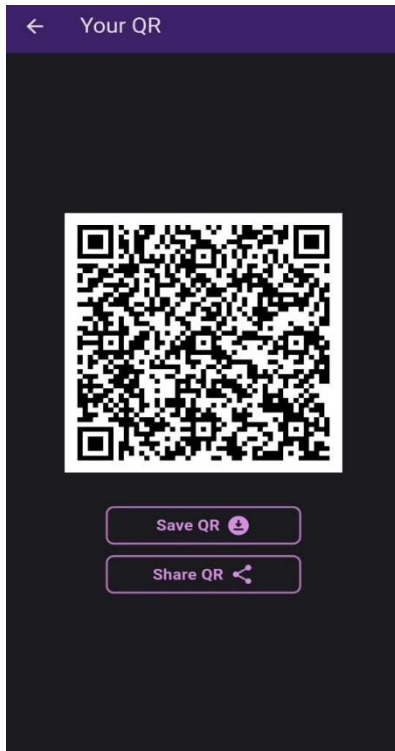


Fig.5 Delivery QR Code

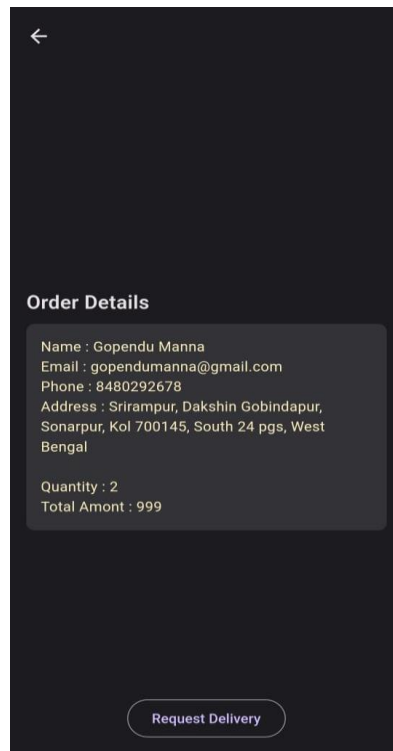


Fig.6:O Order Details Page

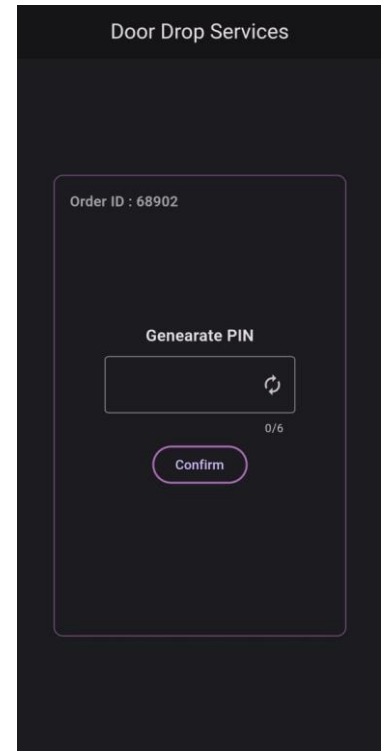


Fig.7:Pin Generator

## Chapter 7

### CONCLUSION & FUTURE SCOPE

#### 7.1 CONCLUSION

In conclusion, Smart Delivery Drop Box systems present a transformative solution for package delivery, addressing the challenges of missed deliveries, package theft, and inefficient processes. Their implementation offers a multitude of benefits for recipients, retailers, delivery companies, and the environment. As technology advances, these systems are poised to become even more sophisticated and user-friendly, making them an increasingly attractive solution for the challenges of package delivery. With the growing demand for efficient, secure, and convenient package delivery solutions, Smart Delivery Drop Box systems are well-positioned to play a pivotal role in shaping the future of logistics and e-commerce.

#### 7.2 FUTURE SCOPE

- a. **Integration with Smart Home Systems:** Integrating Smart Delivery Drop Box systems with smart home technologies will allow users to control and monitor the box remotely using their smartphones or

voice commands. Recipients can receive notifications when packages arrive and unlock the box using their voice or fingerprint ID. This integration will add a layer of convenience and enhance the overall user experience.

- b. **Biometric Authentication:** Biometric authentication technology, such as fingerprint or facial recognition, can further strengthen security measures, ensuring authorized access only. This feature can be particularly beneficial in multi-tenant settings like apartment buildings or gated communities. By implementing biometric authentication, Smart Delivery Drop Box systems can provide peace of mind for both recipients and retailers.

## **BIBLIOGRAPHY**

- a. [1] Chen, W., & Wang, L. (2018). Research on the Application of Smart Delivery Drop Box System in Urban Residential Communities. In 2018 IEEE 9th International Conference on Service Systems and Service Management (ICSSSM) (pp. 1-6). IEEE.
- b. [2] Gupta, S. (2019). Security aspects of smart delivery drop box systems. In 2019 IEEE International Conference on Smart Computing and Applications (ISCA) (pp. 1-5). IEEE.
- c. [3] Li, J., & Zhang, Y. (2020). The integration of Internet of Things (IoT) technology in smart delivery drop box systems for enhancing delivery efficiency and customer satisfaction. In 2020 International Conference on Artificial Intelligence, Machine Learning, and Cloud Computing (AIMLCC) (pp. 1-4). IEEE.

