Cargo Tracing and Business Analysis

Abstract-

Today’s world is growing at a very faster rate with the help of Technology. A lot of different industries are using the latest technology to increase their growth. Due to globalisation, these various industries are achieving business growth in no matter of time. The sellers are producing goods in one country and selling the same in other country, thus by making huge profits. As huge amounts of cargo is shipped everyday by different sellers, today there is no system existing to track the cargo. Thus, to help the seller, we are proposing a Cargo Tracing and Business Analysis System.

Introduction-

It is evident that Cargo industry is an extremely important. The number of shipments subjected to handling errors in a year can result in a huge combined loss for the seller as well as the cargo shipment company while attempting to trace the lost carton. RFID has proven to be a boon for tracking purpose and is one of the most promising, effective and feasible technology for research. Our system will constitute three components: Scanners, Tags and a Database system to read details of tags using scanner and the wifi module. Database will store the information such as destination, source, date of shipment, etc. The tag will be assigned a unique serial number to identify the container it is attached to. It can also store information e.g. shipment number, name of the shipment, etc. The operations will take place in Ultra High Frequency (UHF) range as it works well in dry non-metallic environment, suitable for the application.

Method-

RFID tags are based on the AIDC(Automatic Identification and Data Collection) which is a technology of digitally encoding data into a chip capable of transmitting the stored data with the help of a small antenna. We programmed the RC522 Scanner and uploaded code successfully using Arduino. We can also use Nodemcu for uploading the code to the scanner. The code scans the RFID tags and transmits the unique id along with date and time recorded to the database using the NodeMcu Wifi Module installed. The tags will be attached to the cargo containers after security checks. The cargo information such as the owner identity, shipment details are stored in the centralized database server and the unique tag id will be associated later when the tag is attached to the shipment. The scanners will have access to the internet over which they will report the data to the database located on server.

Node Mcu It is basically a SoC (System on Chip). The database is then populated with all the details of the shipment which passes through the various checkpoints. After attaching the programmed RFID tags to the cargo, it is passed through RFID Scanners. If the specifications mentioned on the tags are not confirmed by the system, the shipment is returned to its previous stage. The tags are checked and replaced if necessary. The identification number of the tags read by the readers is already stored at the local server of Destination. In this way, the authenticity of the offloaded carton is checked and confirmed, avoiding loss/misplacement of the shipment. At the checkout point, as the user reaches the destination, he will have to enter a unique identification number received by him. This number is checked by the reader and authenticated with the help of information already uploaded on main server at the arrival. As per our database we would require four to five attributes to apply the data mining algorithms. Linear Regression Model, SVM Model are the algorithms used for training the dataset. We require the type of shipments made by the seller as well as the cost of shipment per cargo, the region type, the continent type and the profit percentage of which will be available to us in database. With the help of the data available with us and gaining data after the system is working we will predict the profits to the seller based on various attributes mentioned.

Conclusion-

In today’s hustling life, the security of our shipments is one of the most important concerns, due to the repeated loss, thefts and delay in arrival of shipment. The developed system aims at providing a working model of cargo tracking system using RFID tags to the sellers all over the world. These will help in tracing the cargo, locating them and alerting the staff if any cargo gets lost or misplaced. Cargo is routed through various checkpoints with high security due to the unique identification number. It is environment friendly as doesn’t require printed paper or paper in any other form. With this design cargo industry can be more trader friendly, fast, free, with less queuing and greater security of the shipment. Besides the tracking of the shipments, the user also gets the business analysis of the undergoing trade. The seller also gets to know about the rate at which the business is expanding, the expected profit or loss he/she may incur at the end of the transaction. The seller can use this analysis to maximize profit in next transactions. The economic and customer friendly results obtained after deployment of this system in cargo handling are going to be magnanimous.