Chapter 5
Smart Distributed Contactless Airport Baggage Management and Handling System

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ABSTRACT

Smart contactless airport baggage management and handling system is a problem solver that fits in maximum aspects of airport luggage security and management system. Thus, ensuring contactless airport management would result in Covid safety. Current baggage handling management systems (BHMS) are highly error prone. The idea proposed here ensures Covid safety and enhances the current BHMS with the power of algorithms. With the use of this software, a revolutionary idea targets the elimination of the involvement of airport staff during the check-in of a passenger. The authors have developed a system that allows every passenger to validate the details of their luggage four times and maintains security by generating a unique QR at separate checkpoints. They also developed the luggage sorting knapsack algorithm to ensure that the goods are placed efficiently and optimized in the luggage compartment.

INTRODUCTION

This software is made to keep two essential goals in mind. First, the most important is ensuring luggage safety until the passenger leaves the airport (Baby, 2014; Khan & Efthymiou, 2021; Lin et al., 2015; S & Ravikumar, 2015). Second, to eliminate human contact from all possible points, thus ensuring the safety of health of everyone (Harini & Ravikumar, 2020; John et al., 2021; Li et al., 2021; Massaro & Rossetti, 2021). The software ensures that no passenger loses or exchanges their luggage. The main objectives are summarized as Providing efficient management for airports, increasing profits for the airline corporations, increasing profits for the management authority of airports, and providing a seamless operation platform. The software aims to improve the Airport experience for the masses. It also encounters the possibility of making the complete airport contactless with improved security measures and reliability. Even nowadays, bag mishandling occurs, resulting in a poor/awful experience for the passenger. Also, strive to eliminate maximum contact and provide a bio-bubble for each passenger.

Moreover, running an airline is not very profitable, so we even focus on managing cargo so that maximum space is utilized, which can, in turn, ripe better profitability. Creativity is one of the areas that airports have consistently exercised to ensure efficiency improvements, resource optimization, and production increases.

RELATED WORKS

The airport business has seen significant innovation in recent years. As airports strive to enhance safety and security, the emphasis on digitalization, efficiency, and productivity has grown (Baki et al., 2022)

Mismanaged passenger luggage is still a significant issue in the airline business. This project focuses on developing an RFID-based baggage handling system (BHS) for airport identification and monitoring of passenger luggage. The existing BHS system is comprised of identification hardware and cloud-based monitoring software. The BHS gadget is built using the UHF passive RFID system and Internet of Things technologies. The gadget may be utilized as a portable device at the check-in desk and in the arrivals area (Salman et al., 2021). The study (Alagiah & Joseph, 2020; Basjaruddin et al., 2019)investigated the applicability of Near Field Communication as just a non-contact data transfer in an aerodrome to improve passenger and baggage management. Passengers use their smartphones to perform frequent authorization in the airport and an NFC tag to hold the status and location of their baggage during the process. The experimental system was created utilizing several NFC scanners and Android-based smartphone apps. The notion of intelligent airports is now the

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