



A Review on E2E Airport Baggage Handler

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Abstract: Prime vision behind the project is to reduce the overall baggage travel lifecycle starting from baggage collection at various check-in counters to the conveyor belts present in the arrival halls. In regard to the above objective it's obvious to optimize the process at each and every stage of baggage transfer system. The problem related to baggage sorting, loading / unloading, availability at the arrival belt, Estimated Arrival Time (ETA) is addressed in an efficient and proactive manner, so that it's never annoying for a passenger to collect his very own luggage. This also solves the problem of baggage lost/misplace and locate if there is any such unfortunate incident.

Keywords: RFID, ETA, Sorting, Sequencing, Warehousing, Mining.

I. INTRODUCTION

Proposed system controls each stage centrally and makes decision based on available data through various sensors. To support the high availability need and real-time functioning, system is designed and controlled using Raspberry-Pi which gives enough flexibility to scale and process time critical sensor data. Raspberry-Pi has amazing feature of distributed computing by forming cluster of multiple kits together which increases the computing power exponentially. It purely works on a concept of sequencing, sorting, efficient storage (warehousing) and retrieval (mining). When a passenger drops his/her baggage it is tagged with an RFID along with vital information like - passenger image, seat number. This data is also stored and utilized for later decision making, a sequencing model decides the container (blocks of luggage placed in aircraft deck, this is use to balance the load evenly) where the baggage should be placed in, sequencing and sorting at this stage will happen based upon the passenger's flying destination and seat number which was captured during the time of baggage check-in. This solves the sorting, loading and unloading problem.

Post this challenge is to calculate ETA for each baggage and provide this information to the passenger via SMS. Since the baggage are already loaded based upon the passenger's features – seat, destination etc. It's pretty obvious that the passenger present on first row will of-board the aircraft first, same applies for the baggage too. As the baggage are already tagged with RFID it can be easily identified and computed ETA can be made available to the passenger via SMS or screens available in within the airport premises. This system will also supplement the RFID with the camera data and track the passengers movement in real-time and provide vital information to the baggage loaders (workers responsible for carrying the baggage from aircraft to arrival hall) like which baggage to prioritize first based on the exact location of passenger, capacity of conveyor belt and waiting time of the passenger.

If we look at the proposed system closely it actually uses the resources which modern airports are already equipped with, such as camera (CCTV), conveyor belts etc. So implementation cost would not be much. On a different note if we look at the pros it provides a lot to all the stakeholders - aircraft carriers, airport authorities and at last the passengers. Since this system is fully automated there is very little scope of margin and even if there's an error like baggage lost or so, it could be easily identified as we will have exact data logged in the central servers.

II. LITERATURE SURVEY

The development of global associations and dual transfer flights increases the passenger and baggage volumes creating big challenges to airports and airlines. Existing baggage handling system relies on an ageing barcode system with high error percentage. For larger airport automated system is must to match dynamic world. Thus airline requires a highly efficient method to handle the increasing passenger and baggage volumes and thus the trending RFID technology has drawn the attention of the airline. Barcode reading problems cause 9.7% of all mishandled baggage and failures to receive a baggage status message contribute to a further 11% mishandled baggage.

III. CONCLUSION

Complete system is driven by a central control system using data gathered by various sensors. This makes the complete operation smooth and effective. Device is controlled by a single chip computer Raspberry-Pi which makes it even handier for various types of I/O controls and data processing for smart decision making while sorting, sequencing etc. Hence, the objective to design an optimized baggage delivery and cost effective mechanism is achieved.



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