

Development of a Machine Learning Robot for Baggage Transport Optimization at Airports

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I. PROBLEM STATEMENT

IN an increasingly connected and globalized world, efficiency at airports plays a crucial role in the travel experience of passengers and airline operations. One of the most significant challenges in this context is baggage transport, which often can be a slow and error-prone process. The loss or delay in baggage delivery can have a negative impact on both customer satisfaction and airport operations. [1]

The proposal aims to address this challenge by developing a machine learning robot that optimizes baggage transport at airports. This robot will be capable of using techniques such as country tag identification, baggage detection, and route optimization to enhance efficiency and accuracy in baggage delivery. [2]

II. OBJECTIVES

The primary objectives of this project are as follows: supervised, unsupervised and reinforcement.

1. Develop a machine learning system capable of accurately and swiftly identifying and reading country tags on baggage.
2. Implement a baggage detection algorithm that efficiently locates and tracks each piece of luggage.
3. Design a route optimization system that determines the most efficient route for transporting baggage from the aircraft to the baggage claim area.

III. SOLUTION PROPOSAL

In order to achieve the expected outcome first is to define the types of machine learning that will be involved in the project. Once set that, in this case will be performed supervised and unsupervised learning, as well reinforcement learning. For it, the following text shows how the learning is going to be performed.

1. Country Tag Identification: Supervised machine learning techniques will be employed to train a model capable of recognizing country tags on baggage through image processing.
2. Baggage Detection: An unsupervised machine learning approach will be used for baggage detection and tracking based on video analysis and sensors.
3. Route Optimization: Machine learning and reinforcement learning algorithms will be applied to calculate optimal baggage transport routes, considering factors such as airport load and baggage location.

With that being said, the benefits of the implementation of the project will provide the following benefits. • A significant reduction in passenger wait times for baggage retrieval. • A decrease in baggage losses and improved accuracy in delivery. • An increase in the operational efficiency of the airport.

REFERENCES

- [1] Ross Davies. Solving the carousel crisis: How technology can make luggage safer. <https://www.airport-technology.com/features/baggage-tracking-technology-for-airports/>, 2019. Online; Last accessed October 1, 2023.
- [2] Frances Marcellin. Artificial intelligence: the end of lost baggage? <https://www.airport-technology.com/features/artificial-intelligence-end-lost-baggage/>, 2018. Online; Last accessed October 1, 2023.