AUTOMATED PASSENGER BOARDING KIOSK

DESCRIPTION:

In this project, we want to automate the process of validating passengers at the boarding kiosk of Udacity Airlines. We will use the azure cognitive service to carry out some of the pre-flight boarding procedures. The Azure cognitive service provide easy to use computer vision processes such as authentication or image recognition and text extraction.

DATA SOURCE

- Boarding Pass
    - Passenger Name {First Name, Last Name} – For Identity Verification
    - Class – For Flight Cost Verification
    - Flight No – For Flight Validation
    - Carrier – For Flight Validation
    - Ticket No – For Flight Validation
    - From {Origin} – For Flight Validation
    - To {Destination} – For Flight Validation
    - Baggage – For Flight Validation
    - Date – For Flight Validation
    - Seat – For Flight Validation
    - Gate – For Flight Validation
    - Time – For Flight Validation
- Driving Licence ID card
    - First Name – Identity Verification
    - Last Name – Identity Verfication
    - Date of Birth – Identity Verification
    - Face Picture – Identity Verification
    - Sex – Identity Verification
- 30 seconds video from kiosk
    - Face picture – Identity Verification
    - Sentiment – Customer Satisfaction
    - Emotion – Customer Satisfaction
- Lighter Images
    - Public Lighter Image – Lighter Detection in Baggage
    - Test Carry-on images – Lighter Detection in Carry-on Baggage

SOLUTION

- Text Data Extraction – Azure Form Recognizer – Boarding Pass, Digital ID: validate if the details of the passenger matches the data in the manifest database

- Face Extraction – Face API and Azure Video Analyzer – Digital ID, Video Sample from kiosk: validate the face in the ID matches the extract from the video sample.
- Object Detection – Azure Custom Vision – Lighter Images: get information from images of the passenger belongings if it contains a lighter.

MODEL METRICS AND EVALUATION

- Date Of Birth Validation – Extracted document from digital ID and boarding pass
- Person Validation – picture extracted from 30 seconds video and digital ID
- Name Validation – extracted information from digital ID and boarding pass
- Baggage Validation – extracted picture from carry-on baggage

METRICS:

- For Face API – I used the accuracy metric it explains how efficient the model identifies the face
- For Object Detection – I used the precision, recall and accuracy metrics.

THRESHOLD FOR OBJECT DETECTION

- Lighter Object Detection – 80% threshold because the object is a very dangerous one that we cannot afford to wrongfully detect lighter.