

Automated Passenger Boarding Kiosk Project

Problem Definition/Statement

Every time we take a plane to travel to a place we are interested in visiting, we must perform a series of steps in order to board our plane. It is of utmost importance to automate and streamline all these steps, so that staff intervention is minimal.

My goal is to design and build a system that allows us to automate all the steps of the check-in process. Using computer vision technologies under Microsoft Azure services we will facilitate the authentication and validation of passengers boarding an aircraft.

Solution Strategy

- As a previous, the flight manifest will be storage in azure cloud (Blob Storage)
- The system will use a trained Azure Form Recognizer model to extract information from IDs and boarding passes when a passenger enters our kiosk
- After passenger information is extracted, Azure Computer Vision, Face services, and Video Analyzer will be used to match a given passenger's face from digital ID with the face extracted from a 30-second video
- Our system will extract the passenger's emotions from the video taken in the previous step, this information will be storage in Azure Blob Storage for customer experience purposes
- Outside the kiosk, the system will do a carry-on baggage validation, our system will validate if a lighter is detected, for this purpose we will use the Azure Vision Service (object detection)
- Finally, the kiosk will output all the extracted and validated information regarding the passenger

Model Performance Metrics and threshold

For all detection and classification models I will use Precision and Recall metrics. Also, I will define threshold for classification problems as 50%, and overlap threshold for object detection problems as 30%. I want to make sure we have an accurate model.