Problem definition

Udacity Airlines wants to implement an easier and faster boarding check process. There are some validations that can be automated leveraging the power of Machine Learning technology. Azure Cognitive Services provide easy to use solutions to achieve this automated process using Text and Image recognition.

Boarding check consists in a validation of inputs from various data sources:

Passenger's ID: Name, date of birth, a photo with their face.

Boarding pass: Contains passenger's personal information (Full Name), and flight-related information (Flight number, seat number, time and date of the flight, Origin and destination)

Flight manifest: information of every passenger that bought a ticket for a flight. It contains both personal information (Full name and date of birth) and flight information (Flight number, seat number, time and date of the flight, Origin and destination).

Video feed from airport cameras: video showing the face of the passenger trying to onboard.

Images from luggage scanners to detect harmful items (lighters)

There are several Azure Services that provide a solution for each validation step

Face API: for the Face validation, i.e., validating that the photo in passenger's ID matches the person trying to board the flight (using video feed).

Azure Video Analyzer: get face images from video feed, used for Face or Personal Identity validation.

Form Recognizer API: to get information from the text in Digital IDs (driver's license), to validate Date of Birth and name matching flight manifest.

Custom Vision API: to create a custom form model to get information from the text in boarding passes, used for Boarding Pass validation by checking that the data matches the flight manifest.

Object Recognition: get information from images taken when scanning passenger's belongings to validate if passengers carry harmful items.

To measure the model performance, I am going to check precision and recall values from trained models to see if the validations are accurate.
Additionally during validation using trained models,