Project Objective

Create an AI and computer vision passenger boarding kiosk that can be used at airports to facilitate the boarding process without human intervention. The kiosk should be capable of performing the following functions:

Requirements

1. Scan and verify passenger information:
    o Scan passenger ID card and boarding pass.
    o Extract information from the boarding pass.
    o Verify that the information matches the ID card, boarding pass, and flight manifest on the server.

2. Facial recognition:
o Take a 15-30-second video of the passenger.
o Perform facial recognition to match the live person with the ID card.

3. Prohibited item detection:
o Scan passenger's carry-on baggage.
    o Identify any prohibited items.
    o Stop passengers from boarding if prohibited items found.

4. Validation and messaging:
    o If all validation succeeds, display a message that the passenger can board the plane.
    o If issues arise, suggest that the passenger see an airline representative to complete boarding.

Simulated Kiosk Experience

- Create passenger manifest with 5+ passengers.

- Fabricate digital IDs and boarding passes for all passengers in manifest.
- Include the project owner's fabricated ID and a 15-30-second video for face recognition validation.
- Scan passenger carry-on items and flag if a lighter is present as a prohibited item.
- Process all data using Azure computer vision services to simulate automated boarding.

Input Data Sources

- Flight manifest list for 6 passengers.
- 6 passenger ID cards.
- 6 passenger boarding passes.
- 15-30 second video of each passenger's face.
- Photo of each passenger's carry-on items.

Solution Strategy

1. Train Azure Form Recognizer model to extract passenger info from boarding passes.
2. Use Face API and Form Recognizer to extract face and personal info from digital IDs.
3. Validate passenger info from boarding passes against the manifest list.
4. Validate passenger info from boarding passes against the manifest list.
5. Verify that the face from the digital ID matches the face from the passenger video using Video Indexer.
6. Train Azure Custom Vision model to identify lighters in carry-on images.
7. Test Custom Vision model on sample carry-on images.
8. Display the final validation success/failure message to complete the boarding process.