# Introduction

FaxHub is an application designed to process documents and extract data using a custom vision model in Azure Form Recognizer. One of the challenges encountered is that some documents are uploaded with incorrect orientations, resulting in poor extraction results. This document outlines an Azure Functions-based solution to detect, correct, and process such documents efficiently.

## Use Case Overview

The primary goal is to ensure that all documents are correctly oriented before being processed by the Form Recognizer. The solution uses Azure Cognitive Services and Azure Functions to build a robust, automated pipeline that can:  
1. Detect the orientation of documents.  
2. Rotate the documents to their correct orientation.  
3. Process the documents to extract structured data using Form Recognizer.  
4. Store or forward the extracted data for further use.

# Detailed Implementation for Azure Functions to Handle Document Orientation in FaxHub

## 1. Overview of Azure Functions Workflow

The Azure Functions implementation for handling document orientation in FaxHub involves the following steps:  
1. Trigger: A new document is uploaded to Azure Blob Storage.  
2. Function 1: Orientation Detection - Uses Azure Computer Vision API to detect orientation and returns the required rotation angle.  
3. Function 2: Image Rotation - Rotates the document to the correct orientation and saves it back to Blob Storage.  
4. Function 3: Form Recognizer Processing - Sends the correctly oriented document to Azure Form Recognizer for data extraction.  
5. Storage: Extracted results are stored in a database or another Blob.

## 2. Setting Up Azure Functions Project

Follow these steps to set up the Azure Functions project:  
1. Prerequisites:  
 - Install Azure CLI for deployment.  
 - Set up a Python environment (v3.8+ recommended).  
 - Install Azure Function Core Tools for local development.  
2. Create a new Azure Functions project:  
 - Use the Azure Function CLI to initialize the project and create a Blob Trigger for orientation detection.  
 - Add subsequent HTTP triggers for document rotation and Form Recognizer processing.

## 3. Orientation Detection Function

This function uses Azure Computer Vision API to analyze the document's orientation and returns the rotation angle. The function is triggered when a new document is uploaded to Blob Storage.

## 4. Document Rotation Function

The rotation function receives the document and the detected angle, rotates it using a library like OpenCV or Pillow, and saves the rotated document back to Blob Storage.

## 5. Form Recognizer Function

This function processes the correctly oriented document using Azure Form Recognizer API. It extracts data and outputs it to a desired storage or database for further use.

## 6. Deploying and Connecting Functions

1. Deploy the functions to an Azure Function App using the Azure CLI.  
2. Use Azure Logic Apps or Event Grid to orchestrate the workflow, ensuring the functions are triggered sequentially.  
3. Configure triggers to pass the required parameters (e.g., blob name and angle) between functions.

## 7. Enhancements

To improve the workflow, consider the following enhancements:  
- Implement retries for handling API failures.  
- Integrate Application Insights for monitoring and diagnostics.  
- Use Durable Functions for more complex workflow management.