**IMAGE RECOGNITION USING IBM CLOUD VISUAL RECOGNITION**

**Given problem statement:**

* Continue building the image recognition system by integrating IBM Cloud Visual Recognition and AI-generated captions.
* Implement the image classification process using the IBM Cloud Visual Recognition API.
* Use natural language generation captions for the recognized images.

Step 1: Integrating IBM Cloud Visual Recognition with AI-generated caption

* Use the IBM Watson Visual Recognition tool to train your model. Upload your images and provide appropriate labels for each category.
* Train the model using your dataset. IBM Watson Visual Recognition will use machine learning algorithms to learn from your data.
* After training the model, you can use it to analyze new images and generate predictions.
* When you receive predictions (labels) for an image from Visual Recognition, use a natural language processing (NLP) model.
* Use the Visual Recognition API to classify images.
* Combine the labels and generated captions to create a meaningful description of the image.



Step 2: Implementation

import requests

import openai

# IBM Visual Recognition API Endpoint and API Key

VISUAL\_RECOGNITION\_API\_ENDPOINT = "YOUR\_VISUAL\_RECOGNITION\_API\_ENDPOINT"

VISUAL\_RECOGNITION\_API\_KEY = "YOUR\_VISUAL\_RECOGNITION\_API\_KEY"

# OpenAI API Key

OPENAI\_API\_KEY = "YOUR\_OPENAI\_API\_KEY"

# Function to get image labels from IBM Visual Recognition

def get\_image\_labels(image\_url):

response = requests.post(

VISUAL\_RECOGNITION\_API\_ENDPOINT,

params={"version": "YYYY-MM-DD"},

headers={"apikey": VISUAL\_RECOGNITION\_API\_KEY},

files={"images\_file": open(image\_url, "rb")},

)

return response.json()

# Function to generate captions using OpenAI API

def generate\_captions(labels):

prompt = "Describe the following labels: " + ", ".join(labels)

response = openai.Completion.create(

engine="text-davinci-002",

prompt=prompt,

max\_tokens=100,

n=1,

stop=None,

apiKey=OPENAI\_API\_KEY

)

return response.choices[0].text.strip()

# Example usage

image\_url = "URL\_TO\_YOUR\_IMAGE"

labels = get\_image\_labels(image\_url)

captions = generate\_captions(labels)

print("Labels:", labels)

print("Generated Caption:", captions)