***Image Recognition with IBM Cloud Visual Recognition***

***Phase 4: Development Part 2***

***Introduction:***

*The aim of this project is to develop the real of image recognition, building a robust and accurate system that can automatically detect, classify, and make sense of the content within images. The aim of this project is to delve into the realm of image recognition, building a robust and accurate system that can automatically detect, classify, and make sense of the content within images. Through the utilization of deep learning techniques, particularly Convolutional Neural Networks (CNNs), we will embark on a journey to empower our software with the capability to discern objects, recognize faces, or even diagnose medical conditions.*

***(As Watson visual recoginization is discontinued so we used Tensor flow and Pillow.py)***

***CODE***

***Python code***

# Import necessary libraries

import os

from flask import Flask, request, render\_template

from PIL import Image

import numpy as np

import tensorflow as tf

from tensorflow.keras.applications.inception\_v3 import InceptionV3, preprocess\_input, decode\_predictions

# Initialize Flask application

app = Flask(\_name\_)

# Load pre-trained InceptionV3 model

model = InceptionV3(weights='imagenet')

# Define a function to preprocess images

def preprocess\_image(image\_path):

img = Image.open(image\_path)

img = img.resize((299, 299)) # Resize to match InceptionV3 input size

img = np.expand\_dims(img, axis=0)

img = preprocess\_input(img)

return img

# Define a route to render the upload form

@app.route('/')

def upload\_form():

return render\_template('upload.html')

# Define a route to handle image uploads

@app.route('/upload', methods=['POST'])

def upload\_image():

uploaded\_file = request.files['file']

if uploaded\_file.filename != '':

image\_path = os.path.join('uploads', uploaded\_file.filename)

uploaded\_file.save(image\_path)

# Preprocess the uploaded image

img = preprocess\_image(image\_path)

# Make predictions using the InceptionV3 model

predictions = model.predict(img)

decoded\_predictions = decode\_predictions(predictions, top=3)[0]

# Return the top predictions

top\_predictions = [{'label': label, 'confidence': confidence} for (\_, label, confidence) in decoded\_predictions]

return render\_template('result.html', predictions=top\_predictions)

# Run the application

if \_name\_ == '\_main\_':

os.makedirs('uploads', exist\_ok=True)

app.run(debug=True)

***HTML CODE***

**Result.html**

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Image Recognition Result</title>

<style>

body {

font-family: Arial, sans-serif;

background-color: #f5f5f5;

text-align: center;

padding: 20px;

}

h1 {

background-color: #333;

color: #fff;

padding: 20px;

}

ul {

list-style-type: none;

padding: 0;

}

li {

background-color: #fff;

margin: 10px;

padding: 10px;

border-radius: 5px;

box-shadow: 0 0 5px rgba(0, 0, 0, 0.2);

}

</style>

</head>

<body>

<h1>Recognition Result</h1>

<ul>

{% for prediction in predictions %}

<li>{{ prediction.label }} (Confidence: {{ prediction.confidence }})</li>

{% endfor %}

</ul>

</body>

</html>

***Upload.html***

<!DOCTYPE html>

<html lang="en">

<head>

<meta charset="UTF-8">

<meta name="viewport" content="width=device-width, initial-scale=1.0">

<title>Image Recognition Upload</title>

<style>

body {

font-family: Arial, sans-serif;

text-align: center;

background-image: url('https://static.vecteezy.com/system/resources/thumbnails/006/115/516/small/abstract-futuristic-circuit-board-illustration-high-computer-technology-dark-blue-color-background-hi-tech-digital-technology-concept-free-vector.jpg');

background-size: cover;

background-repeat: no-repeat;

}

h1 {

background-color: #333;

color: #fff;

padding: 20px;

}

form {

margin: 20px;

}

input[type="file"] {

display: none;

}

label {

background-color: #007bff;

color: #fff;

padding: 10px 20px;

border-radius: 5px;

cursor: pointer;

}

label:hover {

background-color: #0056b3;

}

input[type="submit"] {

background-color: #007bff;

color: #fff;

padding: 10px 20px;

border: none;

border-radius: 5px;

cursor: pointer;

}

input[type="submit"]:hover {

background-color: #0056b3;

}

</style>

</head>

<body>

<h1>Upload an Image</h1>

<form action="/upload" method="POST" enctype="multipart/form-data">

<label for="file">Choose an image</label>

<input type="file" id="file" name="file" accept="image/\*" required>

<br><br>

<input type="submit" value="Upload">

</form>

</body>

</html>

***Conclusion:***

*In conclusion, image recognition technology has made significant strides in recent years, thanks to advancements in deep learning and computer vision. It has a wide range of practical applications, from autonomous vehicles to healthcare and security. However, challenges such as privacy concerns and the need for large datasets for training still exist. As the field continues to evolve, we can expect even more accurate and versatile image recognition systems to be developed, improving various aspects of our daily lives.*