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Class : BS(IT)PART IV

Subject: Computer Vision

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Project On Web App for facial expression recognition

Save file with app.py name

```
from flask import Flask, render_template, request
import cv2
import numpy as np
from tensorflow.keras.models import load_model

app = Flask(__name__)
model = load_model('model.h5')

def index():
    return render_template('index.html')

def recognize():
    file = request.files['image']
    img = cv2.imdecode(np.fromstring(file.read(), np.uint8),
```

```
cv2.IMREAD_GRAYSCALE)
    img = cv2.resize(img, (48, 48))
    img = img / 255.0
    img = np.reshape(img, (1, 48, 48, 1))

    emotion_labels = ['Angry', 'Disgust', 'Fear', 'Happy', 'Sad', 'Surprise', 'Neutral']
    prediction = model.predict(img)
    emotion_index = np.argmax(prediction)
    emotion = emotion_labels[emotion_index]

    return emotion

if __name__ == '__main__':
 app.run()
```

Create a project directory, place the model.h5 file in the same directory, and save the above code as app.py. Make sure you have Flask, OpenCV, TensorFlow, and Keras installed

index.html file

```
<!DOCTYPE html>
<html>
<head>
    <title>Facial Expression Recognition App</title>
</head>
<body>
    <h1>Facial Expression Recognition App</h1>

    <form action="/recognize" method="post" enctype="multipart/form-data">
        <input type="file" name="image">
        <button type="submit">Recognize Expression</button>
    </form>

    <p id="result"></p>

    <script>
```

```
        const form = document.querySelector('form');
        const result = document.getElementById('result');

        form.addEventListener('submit', function(e) {
            e.preventDefault();

            const formData = new FormData(this);

            fetch('/recognize', {
                method: 'POST',
                body: formData
            })
            .then(response => response.text())
            .then(emotion => {
                result.textContent = 'Detected Emotion: ' + emotion;
            });
        });
    </script>
</body>
</html>
```

With these files in place, you can run the web app using the command python app.py.

we can access the web page by visiting http://localhost:5000 in your browser.The page will allow you to upload an image, and after processing it, it will display the recognized facial expression of the image