SUPERIOR UNIVERSITY

Programming For Artificial Intelligence (Lab)

Assignment - 6

Name:

Ali Maqsood.

Roll no:

SU92-BSAIM-F23-050.

Department:

Software Engineering Department.

Program:

Artificial Intelligence.

Section:

BSAI-4A

Question # 1:

Create a unique AI-powered application using OpenCV. Must have a front-end based on flask

Code:

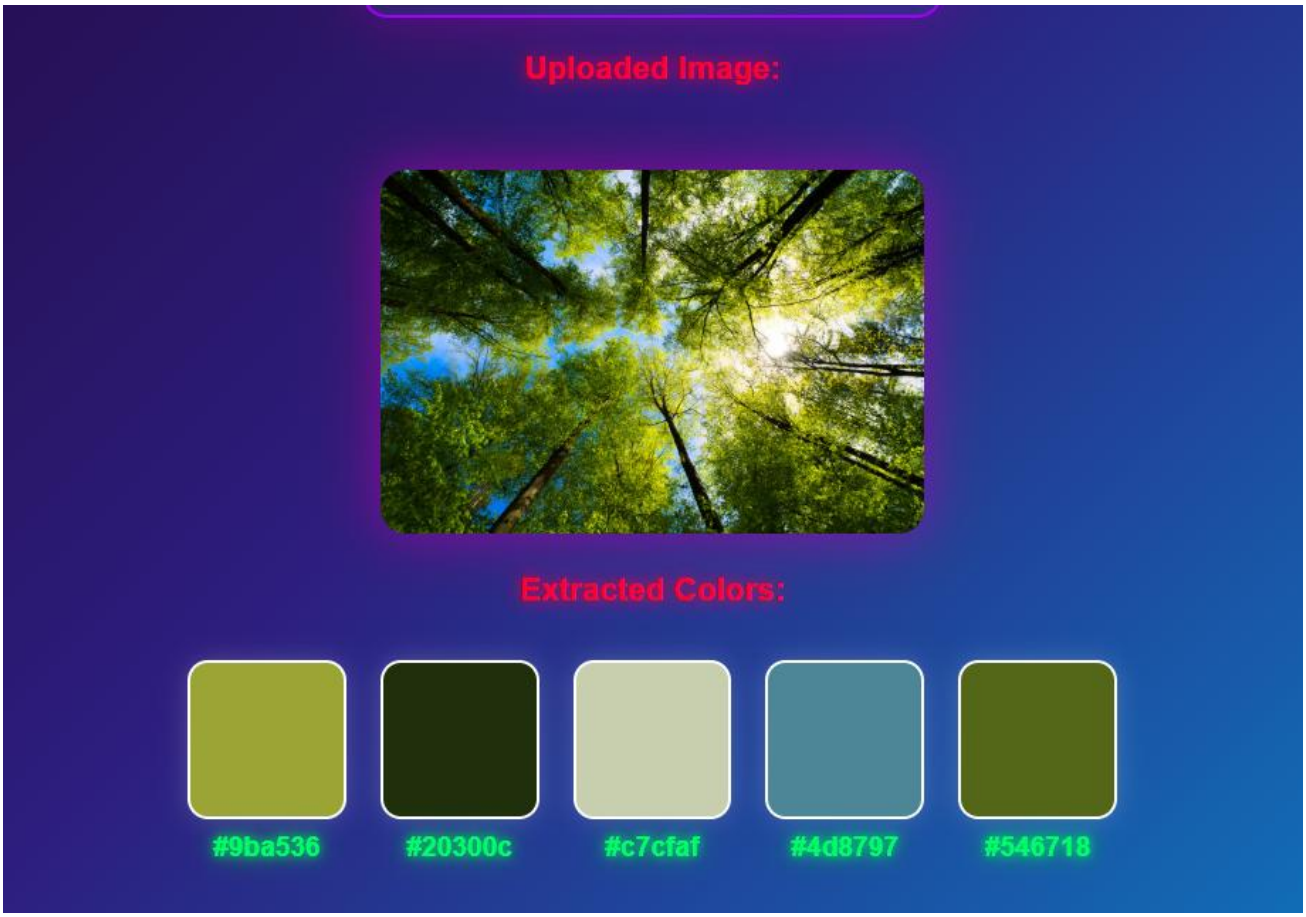
app.py

```
from flask import Flask, render_template, request, url_for
import os
from color_detector import extract

app=Flask(__name__)
UPLOAD_FOLDER = 'static/uploads'

@app.route("/", methods=["GET", "POST"])
def index():
    colors=None
    image_path=None
    if request.method=="POST":
        if 'image' in request.files:
            file=request.files['image']
            if file.filename!="":
                image_path=os.path.join(UPLOAD_FOLDER, file.filename)
                file.save(image_path)
                colors=extract(image_path)
                image_path=url_for('static', filename='uploads/' + file.filename)
    return render_template("index.html", colors=colors, image=image_path)
if __name__ == "__main__":
    app.run(debug=True)
```

color_detector.py

```
from PIL import Image
from sklearn.cluster import KMeans
import numpy as np

def extract(image_path, k=5):
    image=Image.open(image_path)
    image=image.resize((150, 150))
    pixels=np.array(image).reshape(-1, 3)

    kmeans=KMeans(n_clusters=k, n_init=10)
    kmeans.fit(pixels)

    colors=kmeans.cluster_centers_.astype(int)
    hex_colors=[]
    for color in colors:
        r,g,b=color
        hex_code=f"#{r:02x}{g:02x}{b:02x}"
        hex_colors.append(hex_code)

    return hex_colors
```

Output:


Uploaded Image:
Extracted Colors:
#9ba536
#20300c
#c7cfaf
#4d8797
#546718