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DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

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REPORT

On

"**Image Processing**"

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Introduction

In the era of rapidly advancing technology, image processing has emerged as a pivotal field with multifaceted applications across various domains. This report presents a comprehensive overview of project on Image Processing, which is designed to address specific challenges and explore the opportunities presented by this transformative technology.

In the modern world, the ubiquity of digital imagery has revolutionized the way we capture, store, and share information. Image processing is an essential tool in various domains, such as photography, graphic design, and data analysis. However, existing image processing tools often come with a steep learning curve and may not provide a user-friendly interface for users to apply common image manipulation operations. This project aims to address the need for a user-friendly image processing application that simplifies image manipulation for non-technical users.

Problem statement:

Existing software often presents challenges with complexity, a lack of guidance, and inefficiency, making it less accessible to users with limited technical expertise. To address this issue, our goal is to create an intuitive application that simplifies image manipulation. By offering a streamlined graphical interface, real-time image previews, and guided operations, this application will empower users to effortlessly perform common tasks, such as resizing, cropping, and enhancing images.

Additionally, the application will collect user feedback to drive continuous improvements and ensure its accessibility and usability for a diverse audience. Users with minimal image processing experience may find it challenging to achieve their desired results without extensive training or prior knowledge.

Objectives:

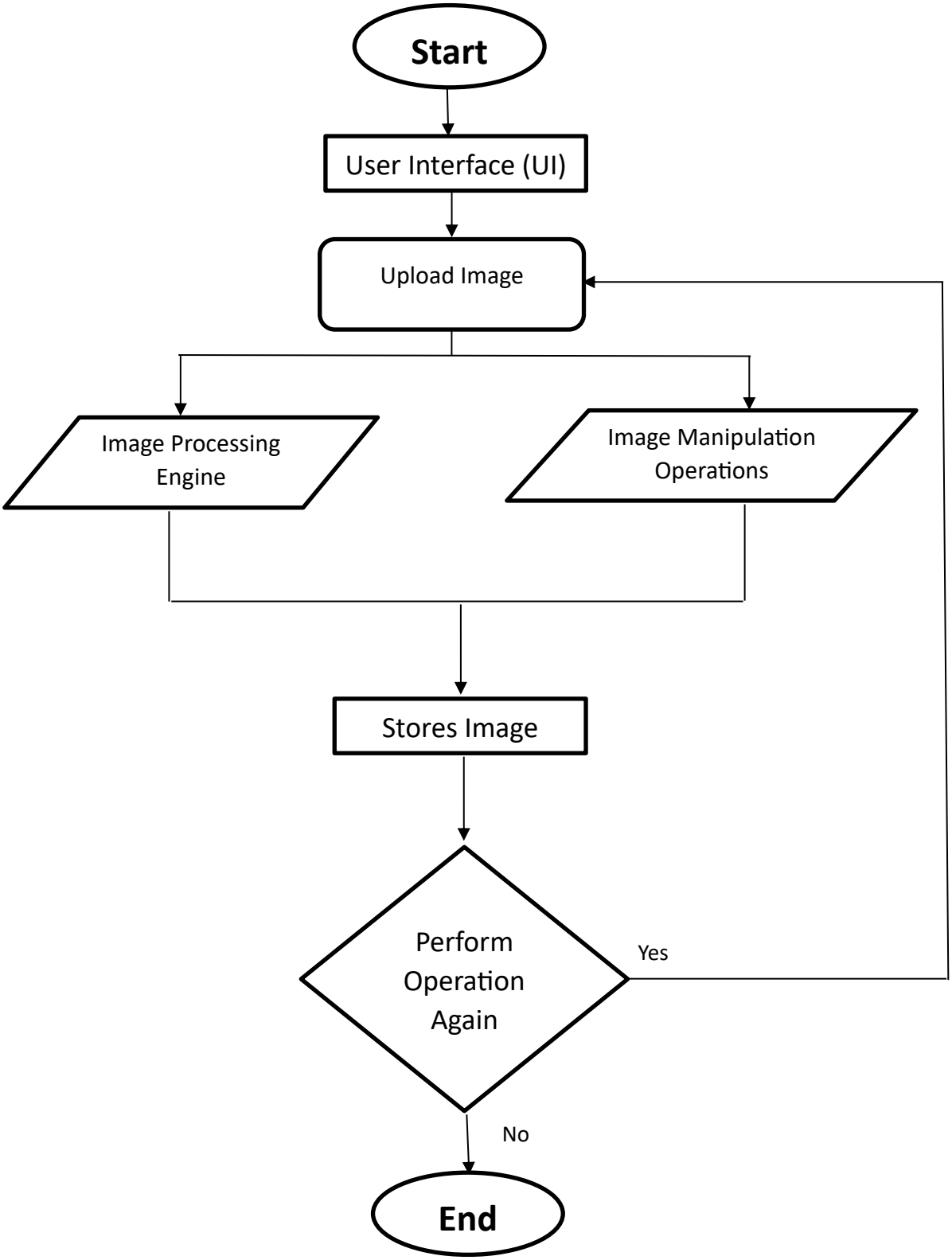
1. An intuitive and easy-to-navigate interface for uploading and manipulating images.

2. Guided and simplified image manipulation options for common tasks such as resizing, cropping, rotating, and enhancing.

3. Real-time previews to help users visualize the effects of their selected operations.

4. Accessibility to a wide range of users, including those with limited technical expertise.

Proposed system architecture:



In the above figure, shows the system architecture of Image Processing System which contains Image processing Engine, Image Manipulation operation and Final Output.

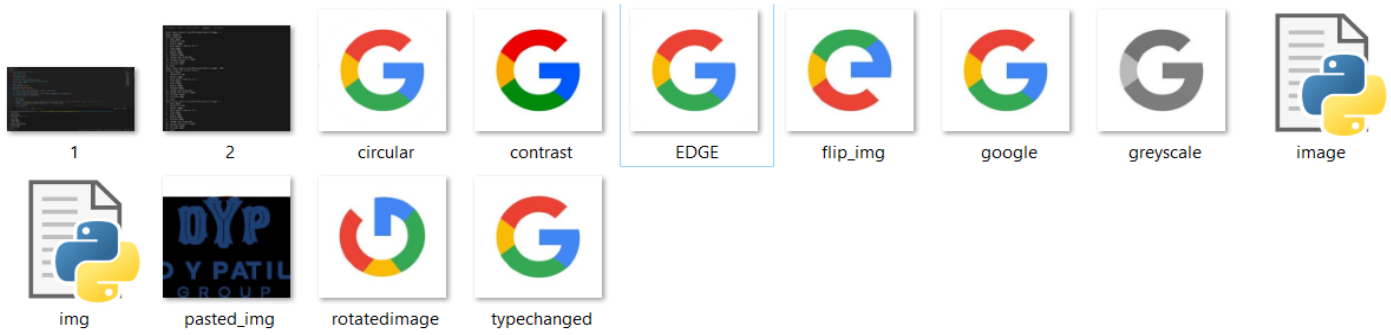
Implementation:


```python
from fileinput import filename
import numpy as np
import tkinter as tk
from tkinter import *
from tkinter import filedialog
from tkinter.filedialog import askopenfile
from PIL import Image, ImageEnhance, ImageTk,ImageDraw
from PIL import Image
root = tk.Tk()
root.geometry("600x400")
root.title("Image Processing")
my_font1 = ('times', 18, 'bold')
l1 = tk.Label(root, text='Upload Images', width=45, font=my_font1)
l1.grid(row=1, column=1, columnspan=4)
b1 = tk.Button(root, text='Click here to Upload',width=30, command=lambda: upload_file())
b1.grid(row=2, column=1, columnspan=10)

def upload_file():
    global image
    f_types = [('JPG Files', '*.jpg'),('JPEG Files', '*.jpeg'),('WebP Files', '*..webp'),('PNG Files', '*.png'), ("all files", ".")]
    filename = tk.filedialog.askopenfilename(multiple=True, filetypes=f_types)
    for f in filename:
        while TRUE:
```

```
PS C:\Users\Chaitanya\Desktop\Python project> & C:/Users/Chaitanya/AppData/Local/Microsoft/WindowsApps/python3.11.exe "c:/Users/Chaitanya/Desktop/Python project/img.py"
1. Open Image
2. Convert to PNG
3. Resize Image
4. Keep Aspect ratio as it is
5. Crop Image
6. Paste Image
7. Rotate Image
8. Flipped Image
9. Change into Grayscale
10. Change contrast of Image
11. Circular Image
12. Circular Edge
13. Exit
```

```
PROBLEMS    OUTPUT    DEBUG CONSOLE    TERMINAL    SQL CONSOLE

Enter above choice to perform operations on image : 3
Enter height:4
Enter width:400
1.  Open Image
2.  Convert to PNG
3.  Resize Image
4.  Keep Aspect ratio as it is
5.  Crop Image
6.  Paste Image
7.  Rotate Image
8.  Flipped Image
9.  Change into Grayscale
10. Change contrast of Image
11. Circular Image
12. Circular Edge
13. Exit
Enter above choice to perform operations on image : 400
Please enter the correct choice
1.  Open Image
2.  Convert to PNG
3.  Resize Image
4.  Keep Aspect ratio as it is
5.  Crop Image
6.  Paste Image
7.  Rotate Image
8.  Flipped Image
9.  Change into Grayscale
10. Change contrast of Image
11. Circular Image
12. Circular Edge
13. Exit
Enter above choice to perform operations on image : 5
1.  Open Image
2.  Convert to PNG
3.  Resize Image
4.  Keep Aspect ratio as it is
5.  Crop Image
6.  Paste Image
7.  Rotate Image
8.  Flipped Image
9.  Change into Grayscale
10. Change contrast of Image
11. Circular Image
12. Circular Edge
13. Exit
```

Output



Conclusion:

The image processing application has had a significant impact on simplifying the image manipulation process. It has made it more accessible to a wider audience, including professionals, hobbyists, and individuals with varying levels of technical expertise. The application's success is evident in its ease of use, real-time previews, and the reduction of the learning curve typically associated with image processing software.