

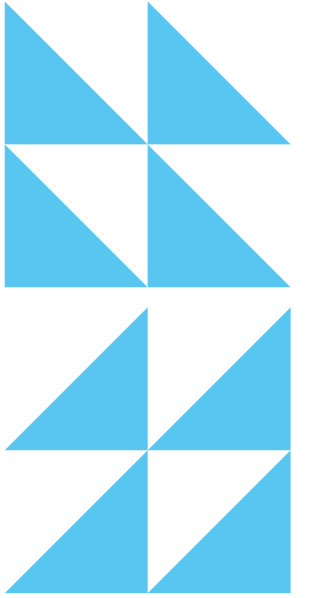


IMAGE PROCESSING PROJECT

By: Mohamed Helmy Elsayed Kroush



INTRODUCTION



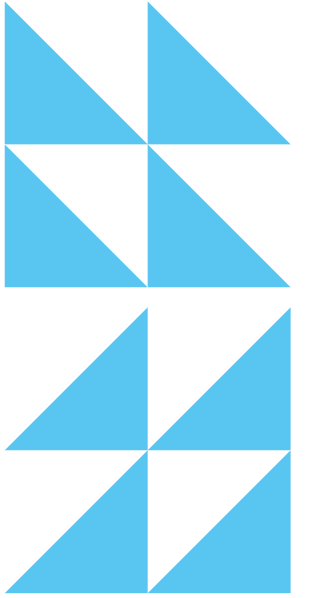
This project is an interactive image processing application designed to apply a wide range of operations on digital images through a user-friendly graphical interface. It allows users to load an image, convert it to grayscale, add different types of noise, and apply transformations including brightness and contrast adjustment, histogram operations, filtering, edge detection, and morphological operations.

The tool also supports advanced techniques such as line and circle detection using Hough Transform.

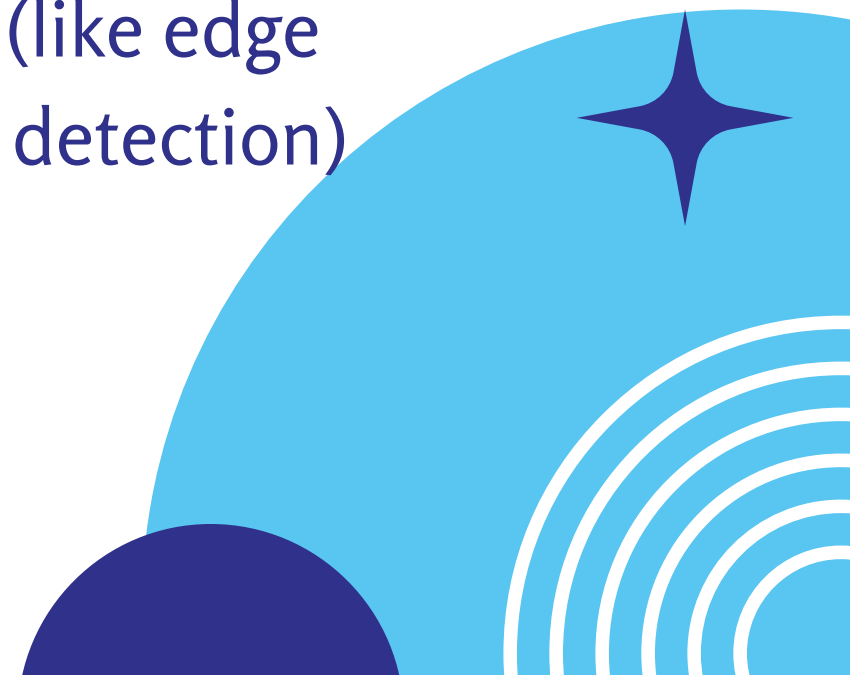
The design focuses on making image processing accessible and visual for learning and experimentation purposes



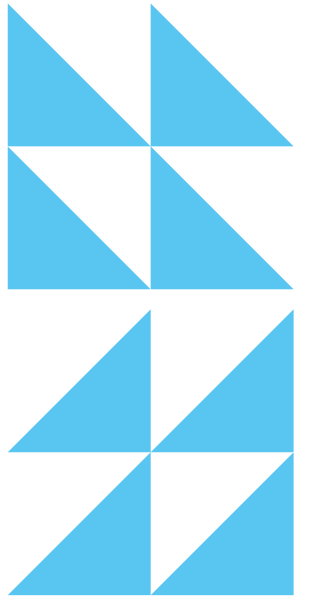
PROJECT OBJECTIVES



- Providing an intuitive interface to explore image processing techniques
- Allowing real-time visualization of transformations and filtering
- Supporting both basic (like brightness/contrast) and advanced functions (like edge and shape detection)



PROJECT FEATURES



The project offers a variety of image processing features through an easy-to-use interface, including:

- Image loading and color conversion
- Noise addition (Salt & Pepper, Gaussian, Poisson)
- Point transforms (brightness, contrast, histogram)
- Local transforms and edge detection (Sobel, Canny, etc.)
- Hough Transform for line and circle detection
- Morphological operations (dilation, erosion, etc.)
- Visual output for original, noisy, and processed images



PROJECT OVERALL

Image Processing Project

Load image

Open..

Convert

☐ Default color

☒ Gray color

Add noise

☒ Salt & Pepper noise

☒ Gaussian noise

☒ Poisson noise

Original image

Point Transform Op's

Brightness adjustment

Contrast adjustment

Histogram

Histogram Equalization

Local Transform Op's

Brightness adjustment

Contrast adjustment

Histogram

Histogram Equalization

Edge detection filters

☒ Laplacian filte

☒ Gaussain filter

☒ V. Sobel

☒ H. Sobel

☒ V. Perwitt

☒ H. Perwitt

☒ LOG

☒ Canny method

☒ Zero Cross

☒ Thicken

☒ skeleton

☒ thining

Global Transform Op's

Line detection using Hough Transform

Circles detection using Hough Transform

Morphological Op's

Dilation

Erosion

Close

Open

Choose type of Kernal

Arbitrary

Save Result image

Exit

after noise adding

Result

IMAGE LOADING AND PREPROCESSING

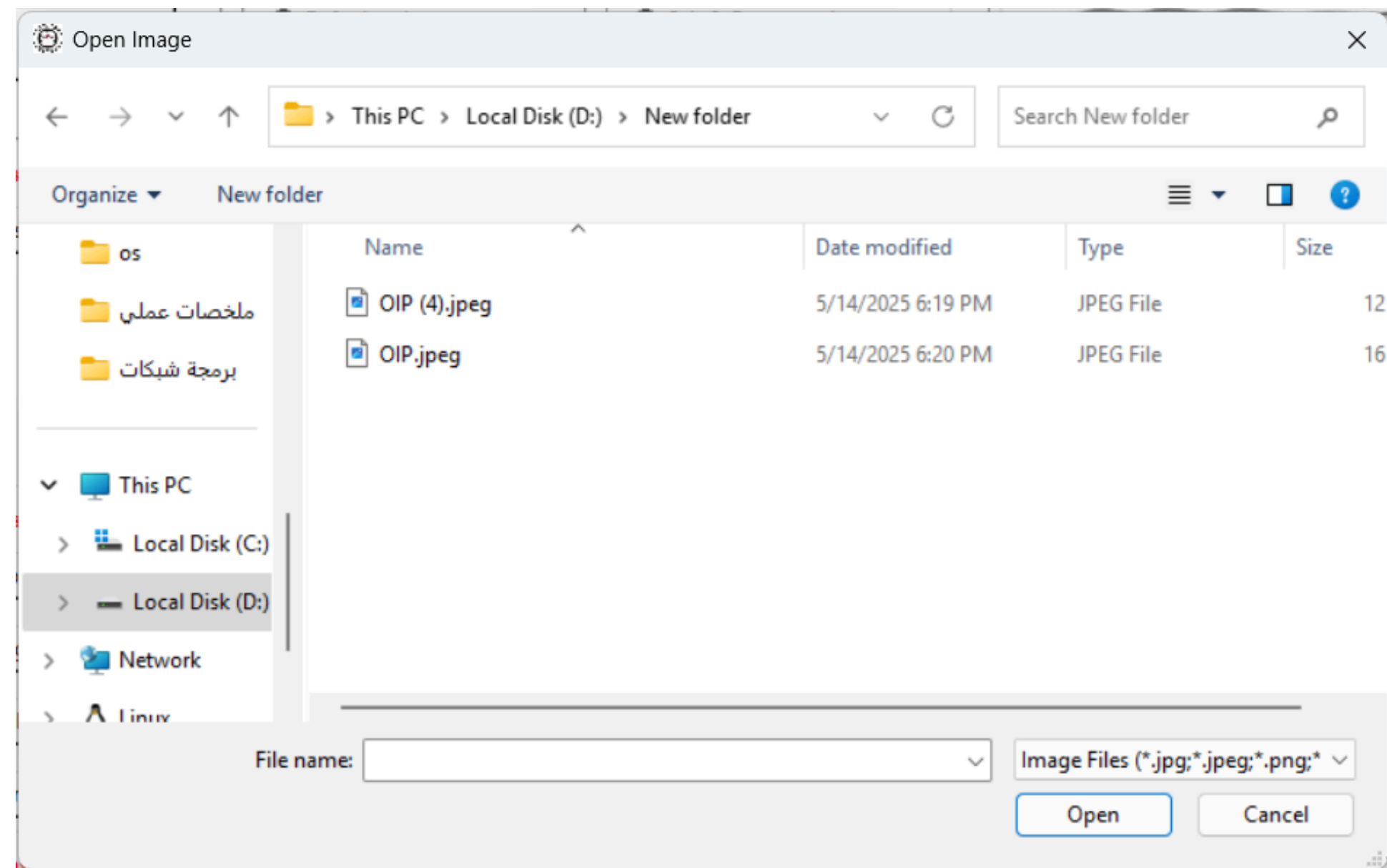
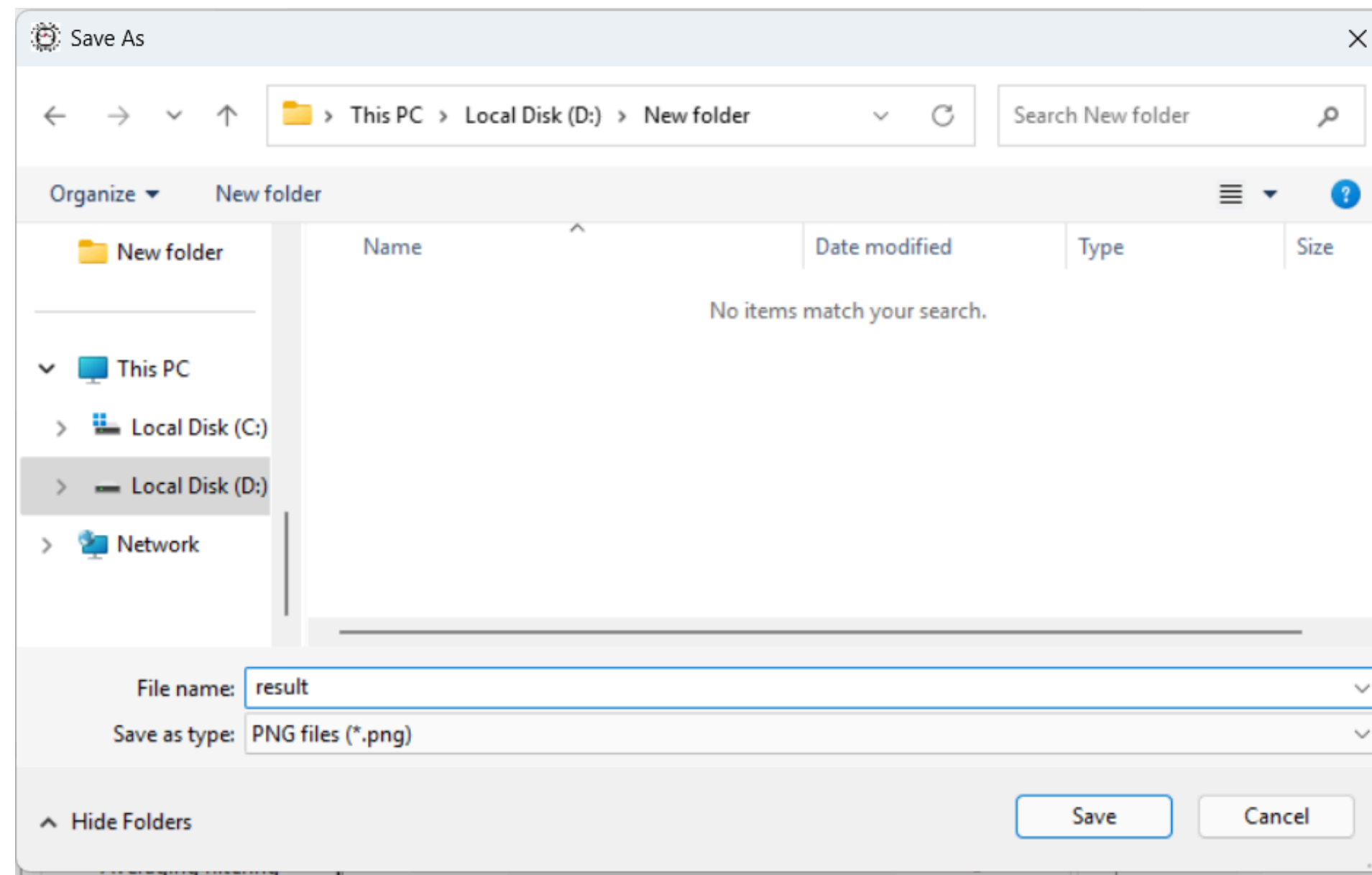
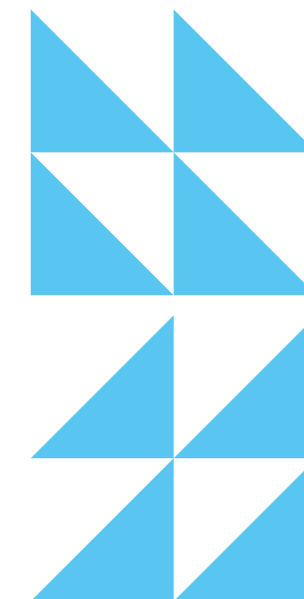


IMAGE SAVING





THANK
YOU

