

Assignment 3 Report

Course: LearnCV.ai

Student Name: G.Anudeepthi

Roll Number: 22671A7373

1. Introduction

The goal of this assignment was to build a **GUI application for image processing and analysis** using **Streamlit** and **OpenCV**. The app allows users to:

- Upload images.
- Apply common image processing operations.
- Visualize and analyze results interactively.

2. Features Implemented

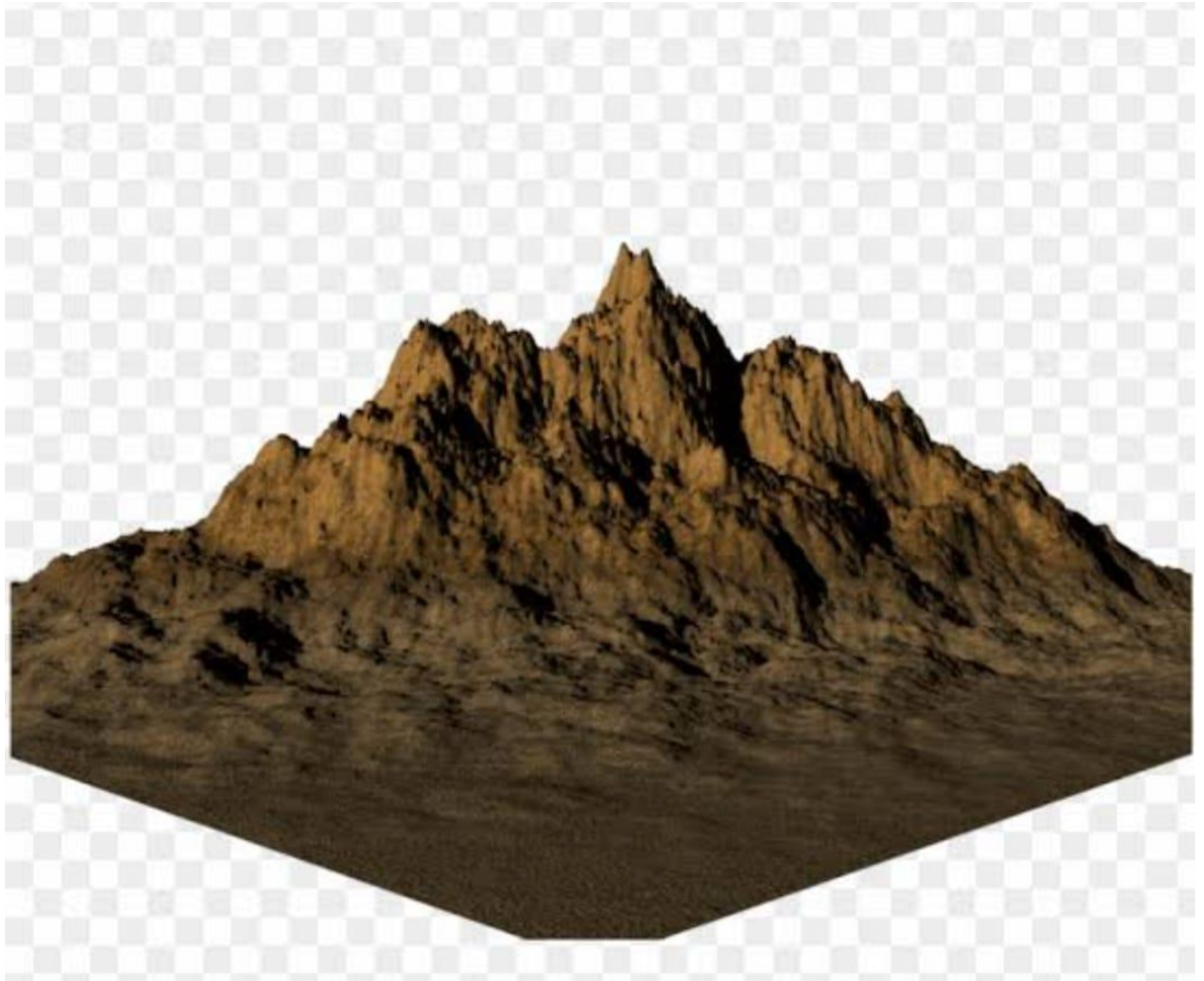
1. **Upload Image** - Supports PNG, JPG, JPEG (up to 200 MB).
2. **Grayscale Conversion** - Converts image to black & white.
3. **Gaussian Blur** - Smoothens the image by reducing noise.
4. **Edge Detection (Canny)** - Detects boundaries in the image.
5. **Rotate** - Rotates image by user-specified angle.
6. **Resize** - Rescales image to new size.

3. Observations

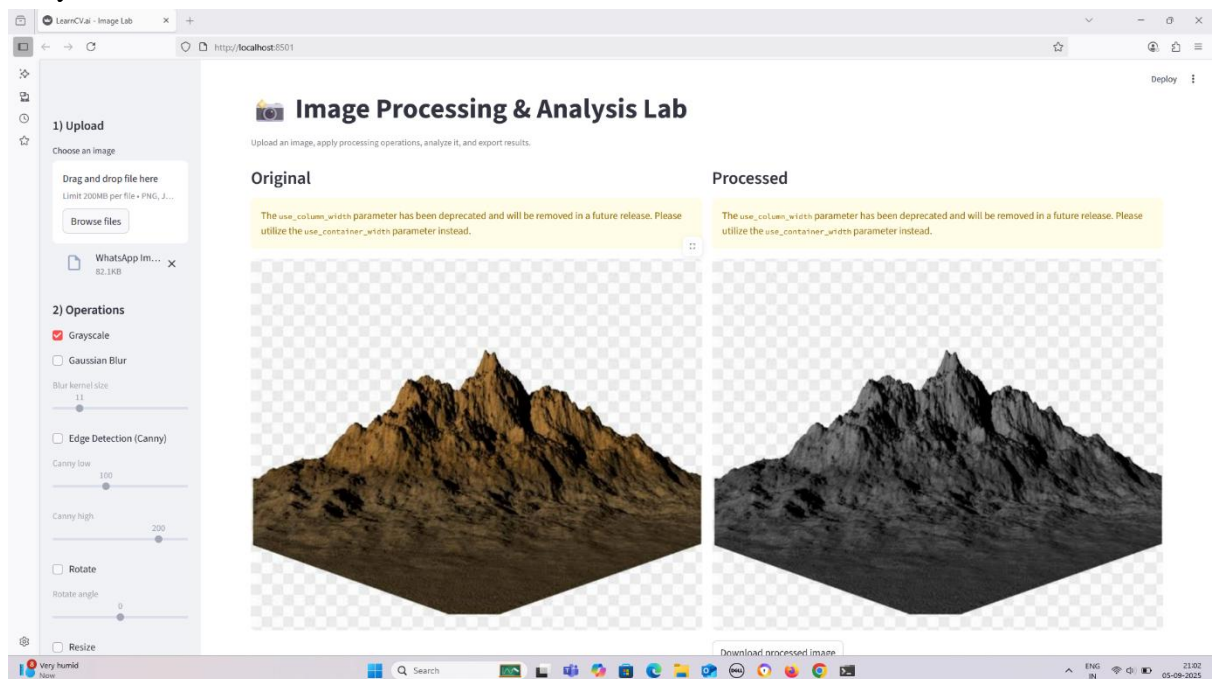
Below are the results of applying different operations on sample images:

Example 1: Mountain image

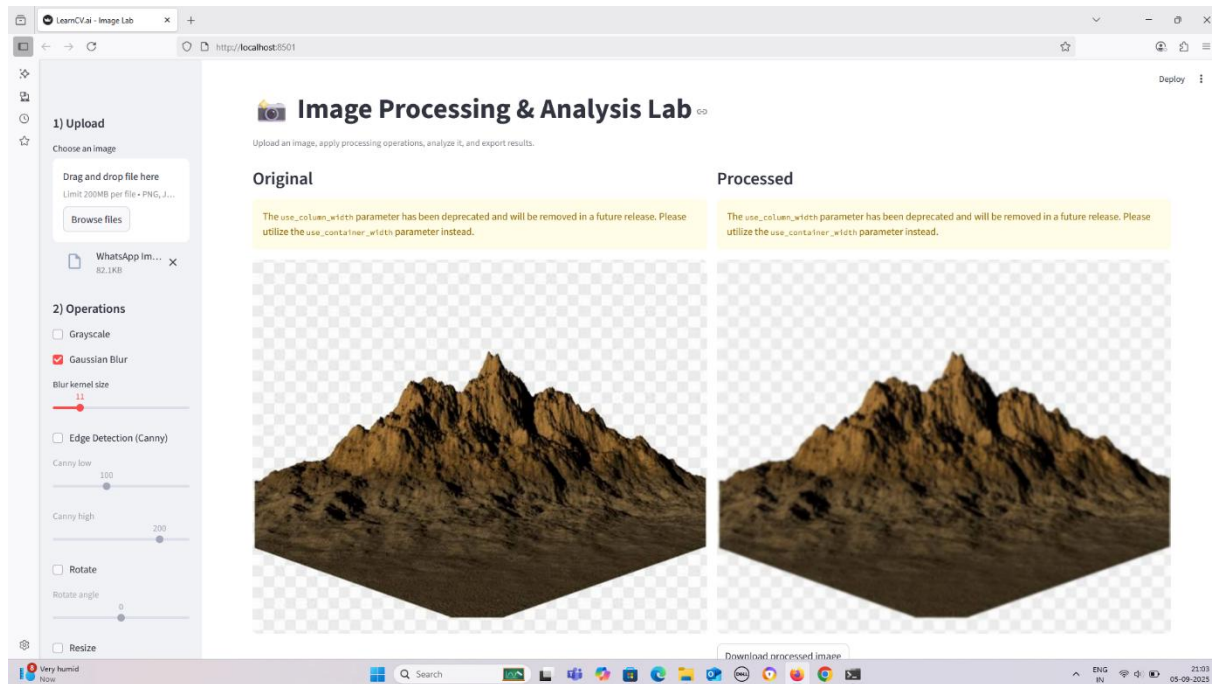
- **Original Image:**



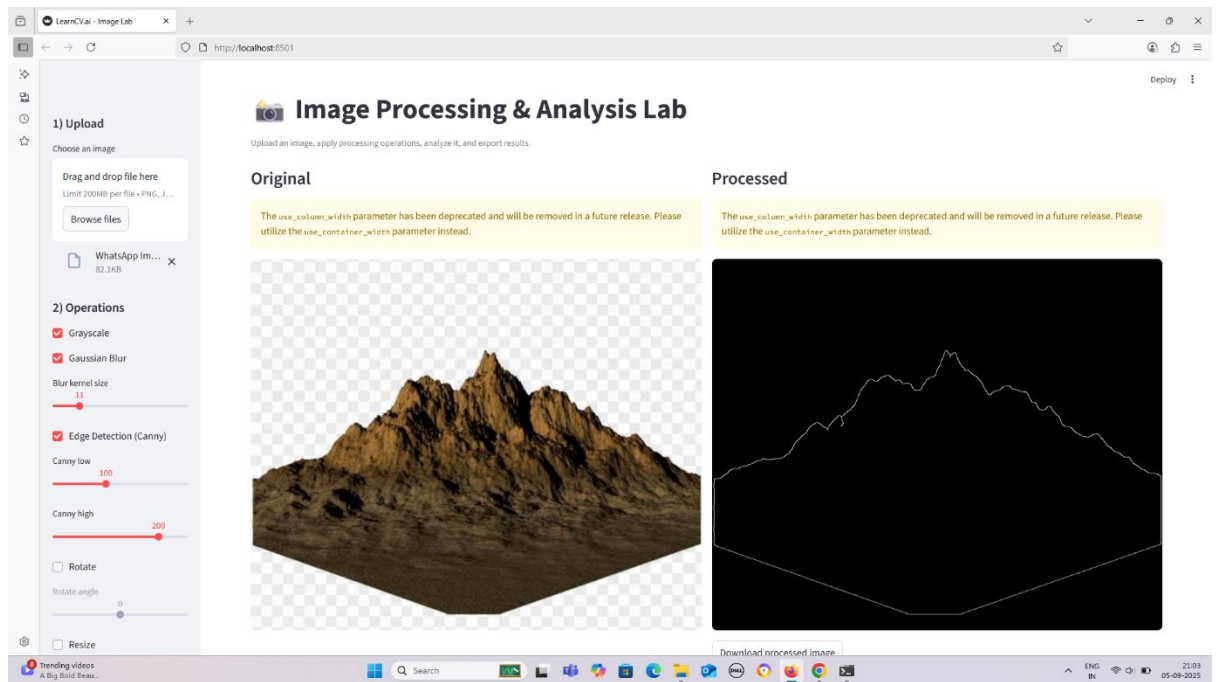
- **Grayscale Result:**



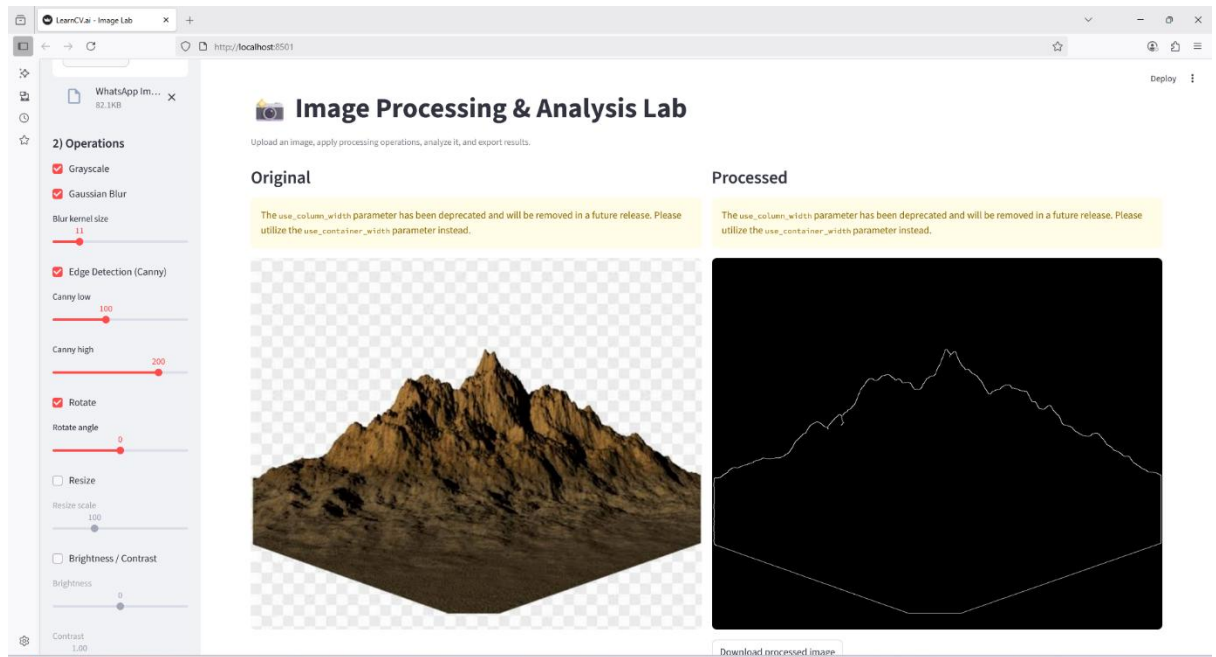
- **Gaussian Blur Result:**



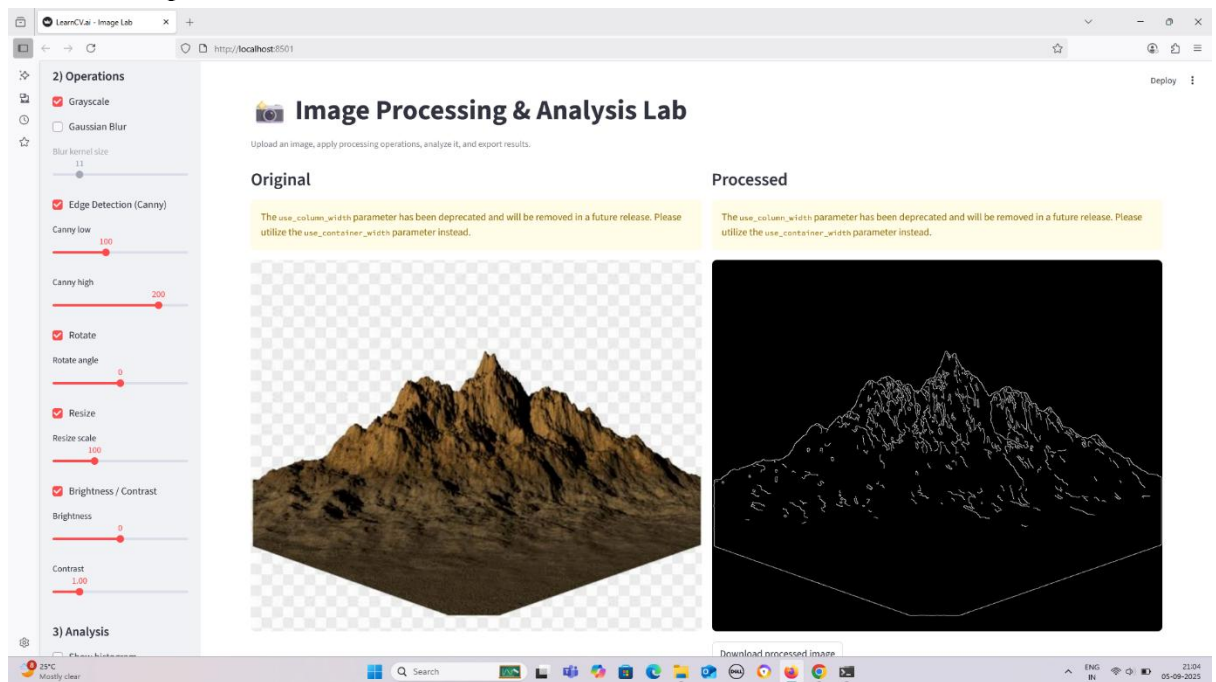
- **Edge Detection Result:**



- **Rotated Image:**



- **Resized Image:**



4. Analysis

- **Grayscale** simplified the image for easier edge detection.
- **Gaussian Blur** removed high-frequency noise.
- **Edge Detection** highlighted boundaries and shapes.
- **Rotation & Resize** demonstrated geometric transformations.

5. Conclusion

This assignment helped me learn:

- How to integrate **OpenCV with Streamlit** for interactive apps.
- How different image processing techniques affect results.
- Importance of **GUI** in making **ML/CV** tools user-friendly.

6. References

- OpenCV documentation: <https://docs.opencv.org/>
- Streamlit documentation: <https://docs.streamlit.io/>