

PHOTO EDITING - Development

CSE 611 – MS Project Development

Professor – Jinjun Xiong



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Updated Home Page



The screenshot shows the home page of a web application titled "Photo Editor". The page has a dark blue header with a logo on the left and navigation links "HOME" and "Features" on the right. The "Features" menu is open, listing various editing tools. The main content area has a dark background with the title "Photo Editor" in large white text. Below the title is a paragraph describing the application's purpose and features. A faint watermark of the University at Buffalo seal is visible on the right side of the page.

SE-611

HOME Features

PASSPORT-PHOTO

CROP

COLLAGE

NOISE-REMOVAL

FORMAT-CONVERSION

BACKGROUND-CHANGE

BRIGHTNESS & CONTRAST

RESIZE

MOSAIC

PDF

IMAGE COMPRESSION

VIDEO COMPRESSION

Photo Editor

The Photo Editor project is a web application designed to enhance and manipulate digital images. It allows users to edit and enhance their photos with a variety of tools and features, including cropping, resizing, adjusting brightness and contrast. The software is user-friendly, offering an intuitive interface and the ability to undo or redo actions. The project is aimed at individuals who want to improve their photos or use them for personal or professional purposes.

Apply high end features - Before fix

SE-G11
PRODUCT DEVELOPMENT

HOME

PASSPORT-PHOTO

CROP

COLLAGE

NOISE-REMOVAL

FORMAT-CONVERSION

BACKGROUND-CHANGE

BRIGHTNESS & CONTRAST

RESIZE

PDF

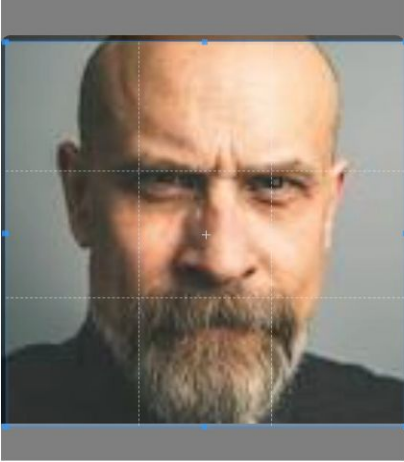
MOSAIC

Choose Country:

Canada

☒ Apply high end features.

Passport Photo



Click or drag photo to this area to upload.

Clear Photo

Preview Photo

Download Photo

Successfully processed

Apply high end features - After fix



HOME

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RESIZE

PDF

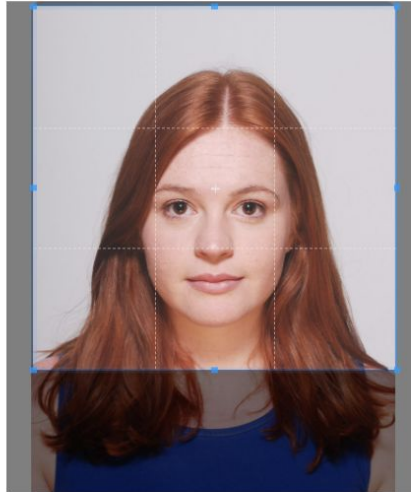
MOSAIC

Choose Country:

United States

☒ Apply high end features.

Passport Photo



Click or drag photo to this area to upload.

Clear Photo

Preview Photo

Download Photo

Format Conversion- Before fix

USE-GII PROJECT DEVELOPMENT [HOME](#) [PASSPORT-PHOTO](#) [CROP](#) [COLLAGE](#) [NOISE-REMOVAL](#) [FORMAT-CONVERSION](#) [BACKGROUND-CHANGE](#) [BRIGHTNESS & CONTRAST](#) [RESIZE](#) [PDF](#) [MOSAIC](#)

Convert To:

JPG

PNG

JPEG

SVG

GIF

BMP

WEBP

HDR

PIC

EXR

Drag and Drop Photo



Click or drag passport photo to this area to upload

Clear Photo

Download Photo

Error encountered.



Format Conversion - After fix



HOME

PASSPORT-PHOTO

CROP

COLLAGE

NOISE-REMOVAL

FORMAT-CONVERSION

BACKGROUND-CHANGE

BRIGHTNESS & CONTRAST

RESIZE

PDF

MOSAIC

Convert To:

JPG

PNG

JPEG

HEIC

GIF

BMP

WEBP

HDR

PIC

HEIF

TIFF



Drag and Drop Photo



Click or drag passport photo to this area to upload

Clear Photo

Download Photo

Mosaic Tool - Before Fix



Photo Collage Tool - Before Fix

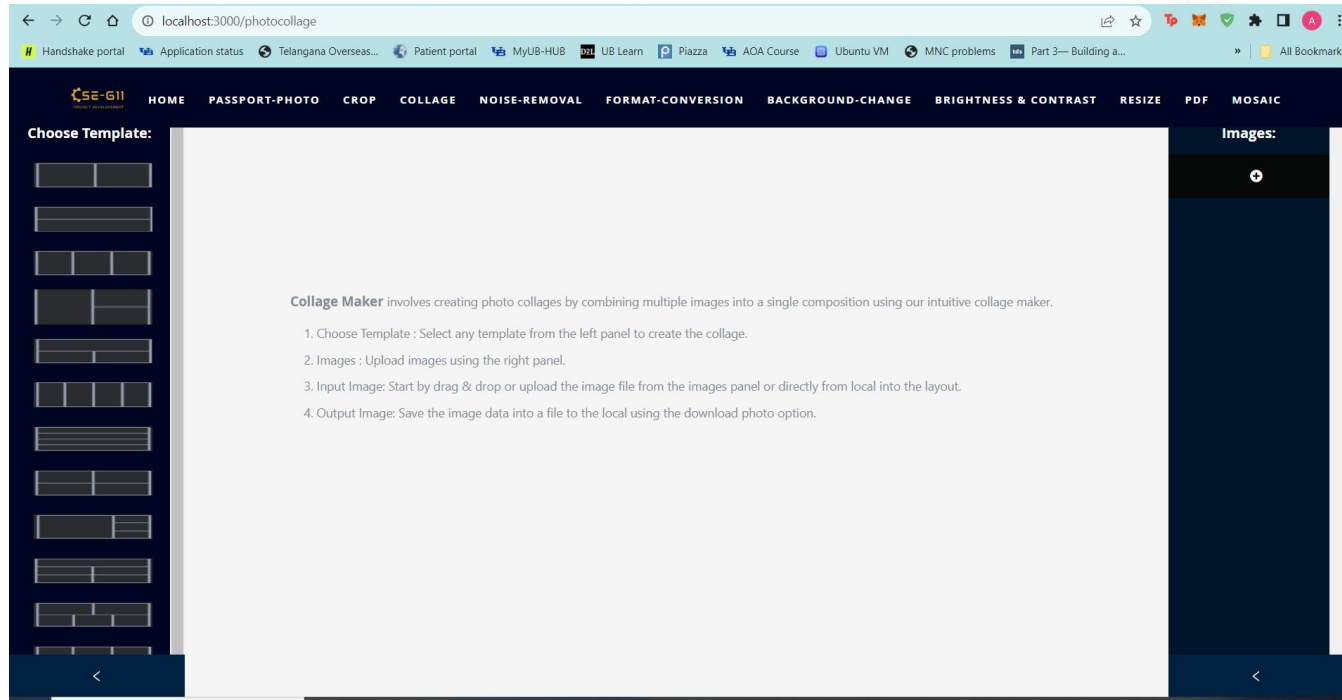


Photo Collage Tool - After Fix

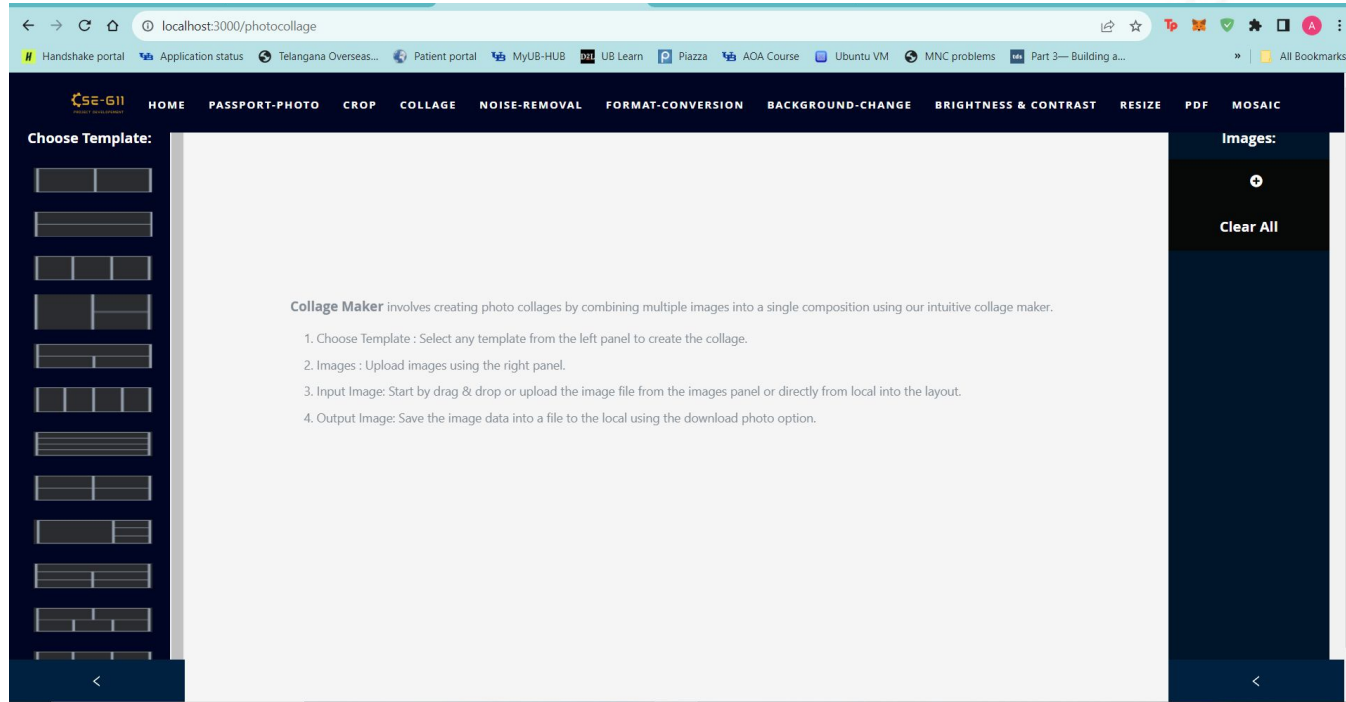


Photo Collage Tool - After Fix (Adding a delete button for individual images)

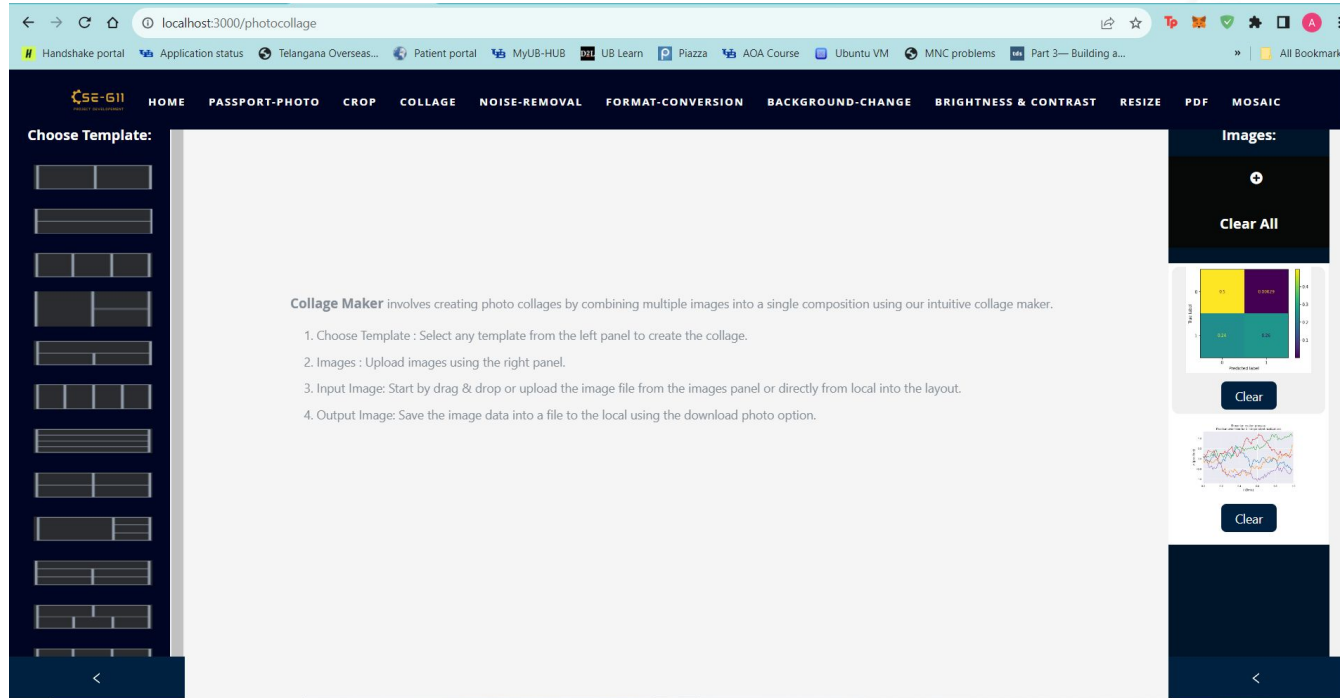
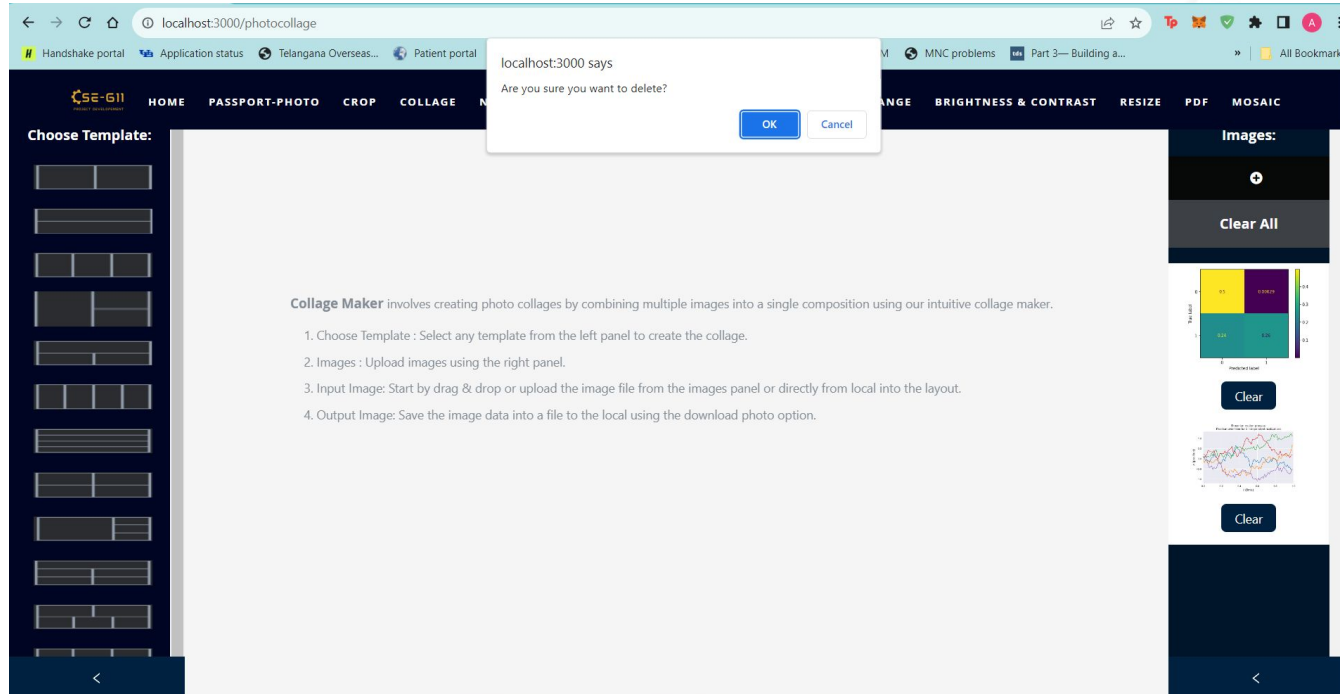


Photo Collage Tool - After Fix (Adding a pop-up asking for confirmation before deleting)



OpenCV to Implement Image Compression

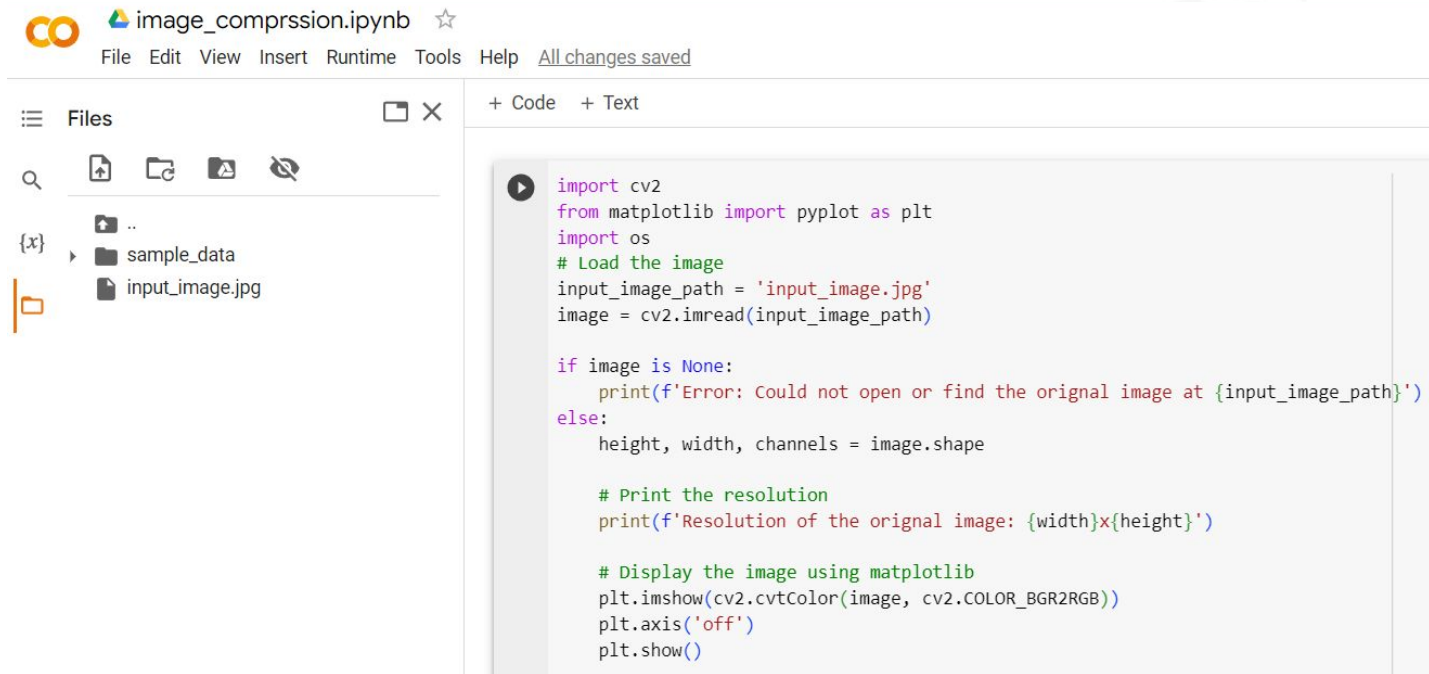
Approach:

- Using cv2 library in OpenCV to implement image compression.

Benefits:

- The cv2 library provides a variety of image compression algorithms, including JPEG, PNG, and WebP.
- The cv2 library can be used to compress images without sacrificing quality.
- The cv2 library is optimized for speed, making it a good choice for real-time applications.

A demo to show effective working of cv2:



image_comprssion.ipynb ☆

File Edit View Insert Runtime Tools Help [All changes saved](#)

Files

- ..
- sample_data
- input_image.jpg

```
import cv2
from matplotlib import pyplot as plt
import os
# Load the image
input_image_path = 'input_image.jpg'
image = cv2.imread(input_image_path)

if image is None:
    print(f'Error: Could not open or find the original image at {input_image_path}')
else:
    height, width, channels = image.shape

    # Print the resolution
    print(f'Resolution of the original image: {width}x{height}')

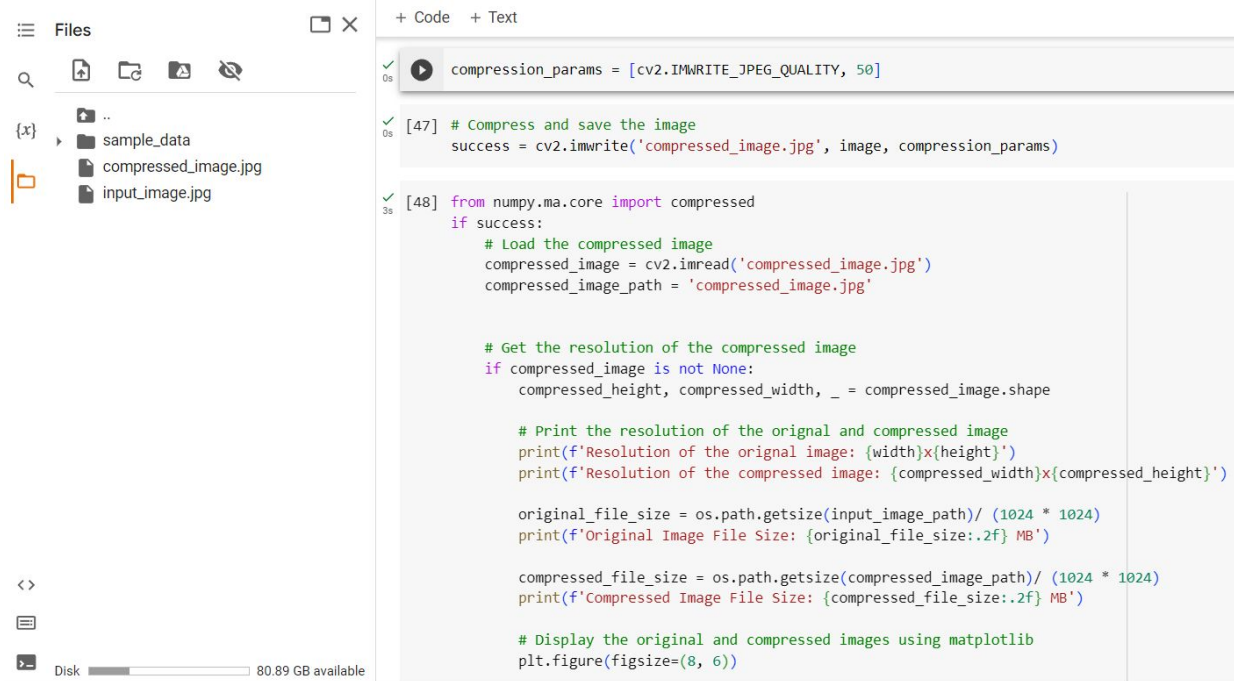
    # Display the image using matplotlib
    plt.imshow(cv2.cvtColor(image, cv2.COLOR_BGR2RGB))
    plt.axis('off')
    plt.show()
```

A demo to show effective working of cv2:

Resolution of the original image: 5184x3456



A demo to show effective working of cv2:



```
compression_params = [cv2.IMWRITE_JPEG_QUALITY, 50]

[47] # Compress and save the image
      success = cv2.imwrite('compressed_image.jpg', image, compression_params)

[48] from numpy.ma.core import compressed
      if success:
          # Load the compressed image
          compressed_image = cv2.imread('compressed_image.jpg')
          compressed_image_path = 'compressed_image.jpg'

          # Get the resolution of the compressed image
          if compressed_image is not None:
              compressed_height, compressed_width, _ = compressed_image.shape

          # Print the resolution of the original and compressed image
          print(f'Resolution of the original image: {width}x{height}')
          print(f'Resolution of the compressed image: {compressed_width}x{compressed_height}')

          original_file_size = os.path.getsize(input_image_path)/ (1024 * 1024)
          print(f'Original Image File Size: {original_file_size:.2f} MB')

          compressed_file_size = os.path.getsize(compressed_image_path)/ (1024 * 1024)
          print(f'Compressed Image File Size: {compressed_file_size:.2f} MB')

          # Display the original and compressed images using matplotlib
          plt.figure(figsize=(8, 6))
```

⇒ **Note: #50 is the quality parameter (0-100), higher is better quality.**

A demo to show effective working of cv2:

Resolution of the original image: 5184x3456
Resolution of the compressed image: 5184x3456
Original Image File Size: 5.30 MB
Compressed Image File Size: 1.91 MB

Original Image



Compressed Image



A demo to show effective working of cv2:

Resolution of the original image: 5184x3456

Resolution of the compressed image: 5184x3456

Original Image File Size: 5.30 MB

Compressed Image File Size: 0.56 MB \Rightarrow *When the quality parameter is set to 10.*

Original Image



Compressed Image



Thank you

