Assignment 01

Spring 2024

Digital Image Processing

Submitted by:
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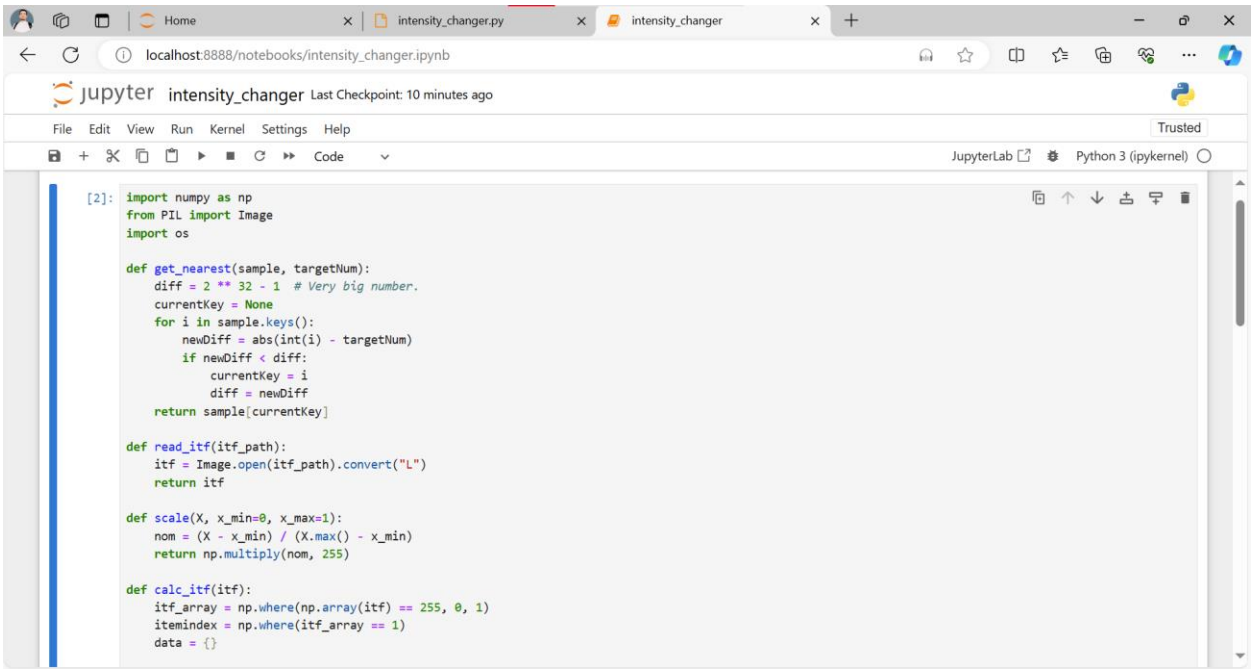
Class Section: **B**

"On my honor, as student of University of Engineering and Technology, I have neither given nor received unauthorized assistance on this academic work."

Submitted to:
Dr. Abeer Irfan
(May 24, 2024)

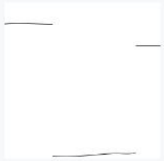
Department: Computer System Engineering

Python code



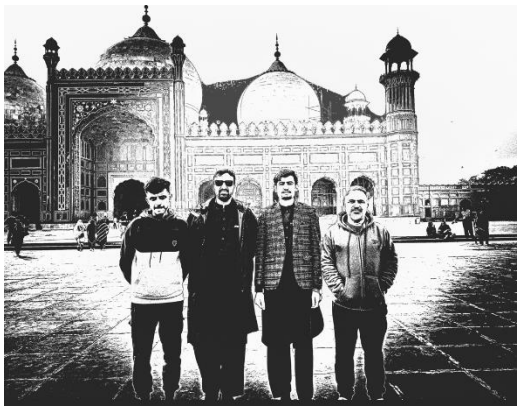

```python
def calc_itf(itf):
    itf_array = np.where(np.array(itf) == 255, 0, 1)
    itemindex = np.where(itf_array == 1)
    data = {}

    for i in range(len(itemindex[0])):
        data[itemindex[1][i]] = float(itemindex[0][i])

    return data

def intensity_transformation(image_path, itf_path):
    image = Image.open(image_path).convert('L')
    itf = read_itf(itf_path)
    data = calc_itf(itf)

    color = np.array(image)
    new_color = np.zeros_like(color)

    for col in range(color.shape[0]):
        for row in range(color.shape[1]):
            try:
                new_color[col, row] = data[color[col, row]]
            except KeyError:
                new_color[col, row] = get_nearest(data, color[col, row])

    new_image = Image.fromarray(new_color).convert('L')
    new_image.save(f'output/modified_{os.path.basename(itf_path).split(".")[0]}_{os.path.basename(image_path)}')
    new_image.show()
```

Before after intensities transformations:

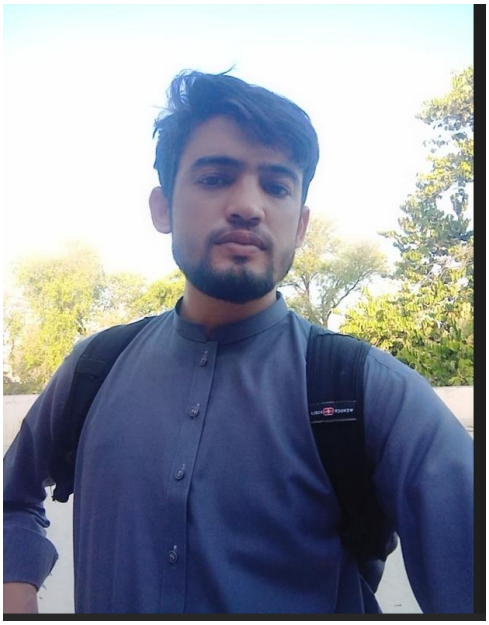
ORGINAL	ITF	RESULT
		
		

Before

after



Before



after