**EXPERIMENT 3**

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| **Name: Shivam Bhosle** | **Roll No: 2** |
| **Subject: Computer Vision (CV)** | **Class/Batch: B-1** |
| **Date of Performance:** | **Date of Submission:** |

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| **AIM** |

**Converting RGB colored image to grayscale image**

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| **Theory** |

Grayscaling is the process of converting an image from other color spaces e.g. RGB, CMYK, HSV, etc. to shades of gray. It varies between complete black and complete white.

**Importance of grayscaling :**

* Dimension reduction: For example, In RGB images there are three color channels and three dimensions while grayscale images are single-dimensional.
* Reduces model complexity: Consider training neural articles on RGB images of 10x10x3 pixels. The input layer will have 300 input nodes. On the other hand, the same neural network will need only 100 input nodes for grayscale images.
* For other algorithms to work: Many algorithms are customized to work only on grayscale images e.g. Canny edge detection function pre-implemented in the OpenCV library works on Grayscale images only.



* To convert RGB colored image to grayscale image.

**Procedure**

**Step 1 :** Import the OpenCV .

pip install opencv-python

**Step 2 :** Read the original image using imread() than convert to grayscale using cv2.cvtcolor() function. destroyAllWindows() function allows users to destroy or close all windows at any time after exiting the script.

# import opencv

import cv2

# Load the input image

image = cv2.imread('C:\\Documents\\full\_path\\tomatoes.jpg')

cv2.imshow('Original', image)

cv2.waitKey(0)

# Use the cvtColor() function to grayscale the image

gray\_image = cv2.cvtColor(image, cv2.COLOR\_BGR2GRAY)

cv2.imshow('Grayscale', gray\_image)

cv2.waitKey(0)

# Window shown waits for any key pressing event

cv2.destroyAllWindows()

**Output**

**RGB colored**  **Grayscale**



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| **Conclusion** |

Hence we have converted the RGB colored image into grayscale image

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| **Assessment** |

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| **Timely Submission**  **(7)** | **Presentation**  **(06)** | **Understanding**  **(12)** | **Total**  **(25)** | **Sign** |
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