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| **Course Name:** | **Digital Image Processing** | **Semester:** | **VII** |
| **Date of Performance:** |  | **Batch No:** |  |
| **Faculty Name:** |  | **Roll No:** |  |
| **Faculty Sign & Date:** |  | **Grade/Marks:** |  |

**Experiment No: 8**

**Title: To study image compression**

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| **Aim and Objective of the Experiment:** |
| To study the process of image compression |

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| **COs to be achieved:** |
| **CO1: Understand fundamental of image processing and Computer vision.**  **CO2: Apply enhancement techniques for images in spatial and frequency domain.**  **CO3: Understand and analyze the digital images using different techniques.**  **CO5: Understand the applications in 2D and 3D Vision systems.** |

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| **Theory:** |
| What is image compression?  Image compression is a process applied to a graphics file to minimize its size in bytes without degrading image quality below an acceptable threshold. By reducing the file size, more images can be stored in a given amount of disk or memory space. The image also requires less bandwidth when being transmitted over the internet or downloaded from a webpage, reducing network congestion and speeding up content delivery.  What are the two types of image compression?  The methods used to compress image files typically fall into one of two categories: lossy and lossless. Lossy compression reduces an image file size by permanently removing less critical information, particularly redundant data. Lossy compression can significantly reduce file size, but it can also reduce image quality to the point of distortion, especially if the image is overly compressed. However, quality can be maintained when compression is carefully applied.  One of the challenges with lossy compression is that it's irreversible. Once it has been applied to an image, that image can never be restored to its original state. If lossy compression is applied repeatedly to the same image, it gets increasingly distorted. That said, lossy compression has proved to be a valuable strategy for the web, where a moderate amount of image degradation can often be tolerated.  The most common example of lossy compression is JPEG, an image compression format used extensively on the web and in digital photography. This widely recognized format is supported by numerous tools and applications. Additionally, compression can be applied in degrees, making it possible to use JPEG compression that best strikes a balance between file size and quality. |

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| **Stepwise-Procedure:** |
| 1. Take a selfie & Transfer the image PC 2. Add noise with different methods 3. Remove noise using a wiener filter, Band Reject filter, optimum notch filter 4. Compress row image with RLE Huffman, arithmetic & IGS coding 5. Perform segmentation using region grow, split and split &merge 6. Cartoonise yourself 7. Repeat the same steps using Matlab / Python |

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| **Output** |
| Upload picture screenshots for all approaches with intermediate steps |

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| **Conclusions:** |
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| **Post Lab Subjective/Objective type Questions:** |
| Answer the following questions:   1. What are the different image compression methods |

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| **Signature of faculty in-charge with Date:** |