I Year II Semester	L	P	C
Code: 17CS261	4	0	3

IMAGE PROCESSING
(Elective-2)

UNITI:

Introduction: Applications of Computer Graphics and Image Processing, Fundamentals on Pixel concepts, effect of Aliasing and Jaggles, Advantages of high resolution systems
DD Aline algorithms: Bresenhams line and circle derivations and algorithms

UNITII:
Transformations: Translations, Scaling, rotation, reflection and shear transformations, Homogeneous coordinates, **Composite Transformations**-Reflection about an arbitrary line; Windowing and clipping, viewing transformations, Cohen-Sutherland clipping algorithm

UNITIII:
Digital Image Properties: Metric and topological properties of Digital Images, Histogram, entropy, Visual Perception, Image Quality, Color perceived by humans, Color Spaces, Palette Images, color Constancy
Color Images: Pixel brightness transformations, Local Preprocessing, image smoothing, Edge detectors, Robert Operators, Laplace, Prewitt, Sobel, Fri-chen, Canny Edge detection

UNITIV:
Mathematical Morphology: Basic Mathematical Concepts, Binary dilation and Erosion, Opening and closing, Gray Scale dilation and erosion, Skeleton, Thinning , Thickening Ultimate erosion, Geodesic transformations, Morphology and reconstruction, Morphological Segmentation

UNITV:
SEGMENTATION: Threshold detection methods, Optimal Thresholding, Edge based Segmentation-Edge image thresholding, Edge relaxation, Border tracing, Hough Transforms, Region based segmentation: Region Mergingm Region Splitting,Splitting and Merging, Watershed Segmentation.
Image Dat aCompression: Imaged at a Properties, Discrete Image Transformations in data compression, Discrete Cosine and Wavelet Transforms, Types of DWT and merits; Predicative Compression methods, Hierarchical and Progressive Compression methods, Comparison of Compression methods, JPEG-MPEG Image Compression methods.

Text Books:

1. Computer Graphics C Version, Donald Hearn, MP aulliBaker, Pearson(UnitI and UnitII)
2. Image Processing, Analysis and Machine Vision, Millan Sonka, Vaclov Halvoc, RogerBoyle, Cengage Learning,3ed,(UnitIII, UnitIV, Unit V and UnitVI)

References:

1. Computer & Machine Vision, Theory, Algorithms, Practicles, ERDavies,Elsevier,4ed
2. Digital Image Processing with MATLAB and LABVIEW, VipulSingh, Elsevier