19CSE367 Digital Image Processing

SARATH TV

Course Outcomes

CO1: Knowledge on various concepts of 2D images and mathematical transforms necessary for image processing

CO2: Ability to apply image processing techniques in spatial and frequency domain

CO3: Ability to analyze filtering in spatial and frequency domain

CO4: Ability to develop software to understand image processing techniques with simple examples

Syllabus

Unit 1

Digital image fundamentals-Image representation, basic relationship between pixels, elements of DIP system, elements of visual perception-simple image formation model, Brightness, contrast, hue, saturation, mach band effect, Colour image fundamentals-RGB, CMY, HIS models.

Syllabus

Unit 2

2D Transforms- DFT, its properties, Walsh transform, 15 Hadamard transform, Haar transform. Image enhancement- Spatial domain methods: point processing- intensity transformations, histogram processing, image subtraction, image averaging Frequency domain methods: low pass filtering, high pass filtering, homomorphic filter, Image restoration- Degradation model, Unconstraint restoration- Lagrange multiplier and constraint restoration

Syllabus

Unit 3

Image segmentation-Classification of Image segmentation techniques, region approach, clustering techniques, Classification of edges, edge detection, Hough transform, active contour Image compression Image compression standards- JPEG& MPEG, vector quantization, wavelet based image compression

Evaluation Pattern

Component	Weightage	
Midterm Exam	30	10 online exam+20 viva
CA	20	Term paper /Assignments+ quiz
End Sem	50	20 online exam+30 viva

Text Books

- Rafael C. Gonzalez and Richard E. Woods, "Digital Image Processing", Third Edition, Pearson Education, 2008.
- S Jayaraman, S Esakkirajan, T Veerakumar, Digital image processing ,Tata Mc Graw Hill, 2015.
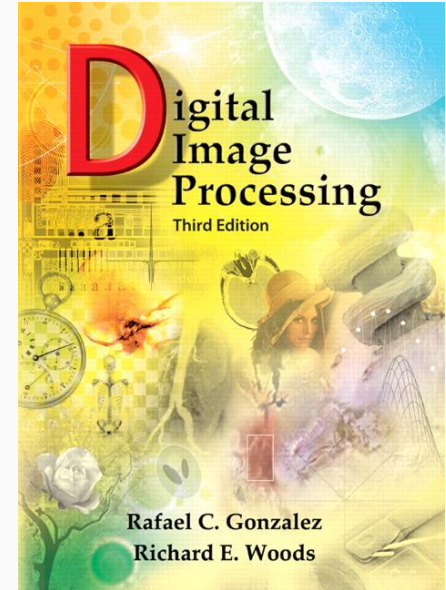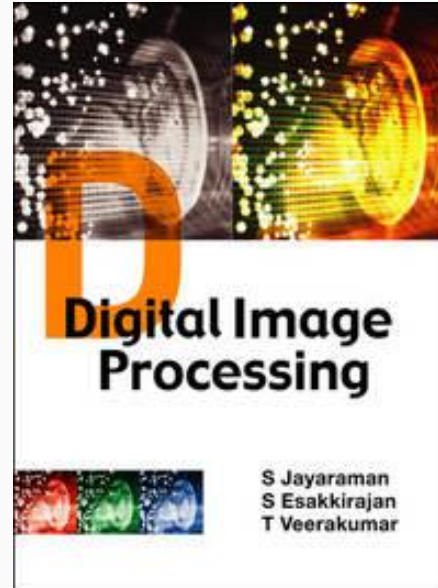
Implementation

Prerequisite

- Knowledge in python & MATLAB.

- Understanding of signal processing.

THANK YOU!