



Course Weekly Outline

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Title	Image processing				
Course Coordinator					
Course Objective	<ul style="list-style-type: none"> • Know an introduction to the image processing • Types of images and how to convert between types of images • Know the techniques that used in image processing • Image compression techniques 				
Course Description					
Textbook					
References	<p>[1] Digital image processing using matlab , Rafael C.Gonzalez, Richard E.Woods, Steven L.Eddins</p> <p>[2] An introduction to digital image processing, Zahir M Hussain</p>				
Course Assessment	Term Tests (40%)	Laboratory	Quizzes (10%)	Project ----	Final Exam As (50%)
General Notes					



Course weekly Outline

week	Date	Topics Covered	Lab. Experiment Assignments	Notes
1		Computer Imaging: fundamental of Computer Vision (CV), Image Processing (IP)	Introduction to programming in matlab	
2		Image Restoration, Enhancement and Compression. Computer Imaging Systems and Digitization	Matlab Environment	
3		The Human Visual System and Image Resolution. Image representation	Vector and Matrix Manipulations	
4		Image Representation Binary, Gray _Scale, Color	Flow control statement (if , For)	
5		Convert color image into gray image. Convert gray image into binary using global threshold value	Continuous flow control H.W(while ,do while)	
6		Adaptive threshold algorithm	Images in matlab (import ,export)	
7		Matlab function Imread , imwrite, resize , rgb2gray , im2bw , imshow, display .. etc	Images as a matrix	
8		Digital image file format And image format	Operation on matrix (resize ,convert color image into gray image) using matlab ready	

			function	
9		YCbCr color space	Convert gray image into binary image using matlab ready function	
10		1 st exam	Convert color image into gray image, implement the algorithm	
11		Zoom algorithms, Zero order Hold and First order Hold.	convert gray image into binary image implement the algorithm using threshold value (global &adaptive)	
12		Image rotation, Image reflection	Implement YCbCr	
13		Image cropping and image algebra Arithmetic Operations.	Image zooming using Zero order hold	
14		Cont... image algebra Logic Operations	Image zooming using first order hold	
15		Noise Removal using Spatial Filters: Mean, Median and difference Filters.	Image rotation	
16		Edge /Line Detection. Sobel Operator.	Image reflection	
17		2 nd exam	Image cropping	
18		Prewitt Operator. Kirch Compass Mask.	Add ,subtract two image	
19		Gaussian and Homogeneity/Difference Operators.	Divide and multiply two image	
20		Introduction to Histogram.	Apply AND OR NOT operation on image	
21		Histogram Modification: Shrinking,	Enhance image using mean filter	

		Stretching and Sliding mapping functions.		
22		Histogram Equalization.	Enhance image using median and different filters	
23		Image Segmentation and connectivity. Region Growing and Shrinking Boundary Detection.	Apply sobel filter Filter to detect edge	
24		mean, standard deviation, energy and entropy of image	Apply Prewitt and Kirsh compass mask to detect Edge	
25		3 rd exam	Apply Gaussian and Homogeneity/Difference Operators to detect Edges.	
26		Discrete Transform. Fourier Transform.	Find the Portability of BMP image, and draw histogram of image.	
27		Cosine Transform	Apply Histogram Equalization on image.	
28		Compression System Model: Compression Ratio and Entropy	Find the mean, standard deviation, energy and entropy of image.	
29		Lossless Compression Methods and Lossy Compression Method.	Apply FT and IFT to image.	
30		Huffman and Run Length Coding	Apply DCT to IDCT image.	
31		4 th exam		

Instructor Signature:

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