EE410 DIGITAL IMAGE PROCESSING   COURSE OUTLINE   (062)

WEEK	TOPICS	SECTIONS	HOMEWORK
1	The digital image processing field: Introduction, definitions, and applications	1.1-1.4	
2	Image fundamentals: Models, sampling, quantization, and basic operations	2.1(R) 2.2-2.4 +(H)	2.4-6,2.10-11
3	Image Enhancement: Background, Point processing, Histogram equalization and specification	4.1, 4.2	4.3, 4.4, 4.8
4	Spatial domain filtering: Smoothing, Median, & Sharpening.	4.3	4.11
5	1-D and 2-D Discrete Fourier Transform (DFT), Properties of DFT.	3.1-3.3	3.2, 3.3, 3.4, 3.5, 3.9
6	Frequency Domain Filtering: Low & high-pass	4.4	4.16, 4.17
7	Color and Multichannel image processing: Color fundamentals, models, transformation, and enhancement	4.6 + (H)	4.23, 4.24
Midterm Exam to be scheduled			
8	Image restoration: Degradation and observation models, Inverse filtering,	5.1, 5.3, 5.4.1, + (H)	5.1, 5.10, 5.11
9	Geometric transformation	5.9 + (H)	5.16
10	Image compression: Fundamentals, information theory and entropy concept, Huffman and run-length coding.	6.1, 6.3.1, 6.3.2(entropy), 6.4.1, + (H)	6.3, 6.6, 6.12
11	Compression Standards, Compression of frame Sequences and color images	6.6.2, + (H)	6.13
12	Image segmentation: Detection of discontinuities, point, line, and edge detection	7.1.1-7.1.3	7.1, 7.4, 7.7
13	Image segmentation: Thresholding, global and optimal. Region-oriented and Motion-based segmentation	7.3 - 7.5	7.11, 7.13, 7.14, 7.21
14	Representation and Description, Computer Vision principles	8.1-8.3	8.1-8.5, 8.8-8.10
15	Practical Applications: Videoconferencing and Internet applications. Ethics and legal issues in DIM	Presentations and demos	

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