Department of Mathematical Sciences: Division of Applied Mathematics

TW793 Digital Image Processing

Course Information 2017

Lecturer

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Prescribed Textbook

R. C. Gonzalez and R. E. Woods, Digital Image Processing, Prentice-Hall, (Third Edition) 2008. The textbook is available in the department. Price: R 958.00.

Web Page

Course documentation is at http://appliedmaths.sun.ac.za/TW793

Lectures

Day	Time	Venue
Tuesday	12:00-12:50	A409
Tuesday	13:00-13:50	A409
Friday	13:00-13:50	A409

Assignments

An assignment is handed out more or less every third week. Each assignment primarily contains computer-orientated problems that you have to solve in Matlab. You are however free to use another programming language, like Python. After the completion of each assignment, you have to hand in a neat printed report. The due dates for these reports are indicated on the next page. Late reports will not be accepted.

Question session

There will be an informal question session once a week (tentatively on Tuesdays at 13:30) in room A409. During this session you can ask questions on the relevant assignments and discuss the assignments among yourselves. These questions are usually on Matlab and certain concepts discussed in class. Lectures may be presented in this time slot from time to time.

Class Tests

You will write two class tests during the semester. The purpose of the class tests is to evaluate your knowledge of the theoretical aspects of the course. The preliminary dates for these tests are as follows...

Test	Date	Time	Venue	Chapter
1	Friday, 1 September 2017	14:00-16:00	A409	3-5
2	Friday, 3 November 2017	09:00-11:00	A409	6, 8-11

Continuous Evaluation and Performance Mark

This module is evaluated continuously. Your performance mark is a weighted average of your assignment mark and your class test mark. The weights are as follows...

Performance mark					
Five assignments:	5	$\times$	14%	=	70%
Two class tests:	2	$\times$	15%	=	30%
					100%

Course Planning TW793 Second Semester 2017

This outline may be adjusted slightly.

Week	Date	Lecture	Assignment due	Chapter in the textbook	Subject
1	Mo, 17 Jul			LECTURES START	
	Tu, 18 Jul	1		1,2	*Orientation*, fundamentals, overview
	Tu, 18 Jul	2		3	Basic grey scale transformations
	Fr, 21 Jul	3		3	Basic grey scale transformations
2	Tu, 25 Jul	4		3	Histogram equalization
	Tu, 25 Jul	5		3	Spatial filters
	Fr, 28 Jul	6		3	Spatial filters
3	Tu, 1 Aug	7		Notes	Fourier analysis (overview/revision)
	Tu, 1 Aug	8		Notes	Fourier analysis (overview/revision)
	Fr, 4 Aug	9	**1**	4	DFT
4	Tu, 8 Aug	10		4	DFT
	Tu, 8 Aug	11		4	Filters: spatial/frequency domain
	Fr, 11 Aug	12		4	Filters: frequency domain
5	Tu, 15 Aug	13		4	Filters: frequency domain
	Tu, 15 Aug	14		4	Implementation
	Fr, 18 Aug	15		5	Image restoration
6	Tu, 22 Aug	16		5	Image restoration
	Tu, 22 Aug	17		5	Image restoration
	Fr, 25 Aug	18	**2**	5	Image restoration
7	Tu, 29 Aug	19		6	Colour processing
	Tu, 29 Aug	20		6	Colour processing
	Fr, 1 Sep	21		6	Colour processing
	Fr, 1 Sep	[A409: 14:00-16:00]		**CLASS TEST 1** (Chapter 3-5)	
	Fr, 1 Sep			LECTURES END	
S E P T E M B E R H O L I D A Y S					
8	Mo, 11 Sep			LECTURES RESUME	
	Tu, 12 Sep	22		8	Image compression
	Tu, 12 Sep	23		8	Image compression
	Fr, 15 Sep	24	**3**	8	Image compression
9	Tu, 19 Sep	25		9	Morphological filters
	Tu, 19 Sep	26		9	Morphological filters
	Fr, 22 Sep	27		9	Morphological filters
10	Tu, 26 Sep	28		10	Image segmentation
	Tu, 26 Sep	29		10	Image segmentation
	Fr, 29 Sep			Monday time table	
11	Tu, 4 Oct	30		10	Image segmentation
	Tu, 5 Oct	31		10	Image segmentation
	Fr, 5 Oct	32	**4**	11	Representation and description
12	Tu, 11 Oct	33		11	Representation and description
	Tu, 12 Oct	34		11	Representation and description
	Fr, 12 Oct	35		11	Representation and description
13	Tu, 18 Oct	36		-	Capita Selecta
	Tu, 19 Oct	37		-	Capita Selecta
	Fr, 19 Oct	38		-	Capita Selecta
	Fr, 20 Oct			LECTURES END	
	Th, 26 Oct		**5**		
	Fr, 3 Nov	[A409: 09:00-11:00]		**CLASS TEST 2** (Chapter 6, 8-11)	

Afrikaans: blaai om...