uc3m | Universidad Carlos III de Madrid
Vicerrectorado de Estudios
Apoyo a la docencia y gestión del grado

COURSE: APLICATIONS OF SPEECH, AUDIO, IMAGE AND VIDEO PROCESSING		
MASTER DEGREE IN TELECOMMUNICATIO ENGINEERING	YEAR: 2ND	TERM: 1

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	TEACHING (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS		DESCRIPTION	CLASS HOURS (1,66=50+50 min)	HOMEWORK HOURS (Max. Estim. 3,25h)
1	1	Course Presentation Overview of Image Processing	x			Course Presentation Overview of Image Processing	1,66	3,25
2	2	Digital Images. Intensity transformations	x			Spatial sampling and quantification. Color models. Principal component analysis. Basic Intensity transformations. Histograms. Histogram Equalization	1,66	3,25
3	3	Lab Session 1: images in Matlab and intensity transformations	x		Computer room	Images in Matlab. Histograms and Histogram Equalization	1,66	3,25
4	4	Spatial Filtering. Edge Detection	x			Low-pass filters. High-pass filters. Gaussian Filters. Statistical ordered filters. Grandient and Laplacian. Discrete approximations. Canny Edge Detector. Edge sharpening	1,66	3,25
5	5	Lab Session 2: Filtering and template matching	x		Computer room	Gaussian Filtering. Template Matching	1,66	3,25
6	6	Image Segmentation	x			Threshold- and clustering-based segmentation	1,66	3,25
7	7	Lab Session 3: Image Segmentation	x		Computer room	Threshold- and clustering-based segmentation	1,66	3,25
8	8	Neural Networks and Deep Neural Networks	x			Introduction to Neural Networks. Why deep?	1,66	3,25
9	9	Lab Session 4: Image Classification	x		Computer room	Image Classification	1,66	3,25
10	10	Convolutional Neural Networks	x			Convolutional Neural Networks	1,66	3,25
11	11	Lab Session 5: Image Classification with CNNs	x		Computer room	Image Classification with CNNs	1,66	3,25

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12	12	Applications of CNNs in Computer Vision	x			Use cases	1,66	3,25
13	13	Lab Session 6: Final Project (1)	x		Computer room	Final Project	1,66	3,25
14	14	Lab Session 7: Final Project (2)	x		Computer room	Final Project	1,66	3,25
	15	Additional session. Lab Session 8: Final Project 3)	x		Computer room	Final Project	1,66	3,25
						Subtotal 1	**25**	**49**
						Total 1 *(Hours of class plus student homework)*	**74**	
15		Tutorials, handing in, etc					1,8	-
16		Assessment					4	4
17								
18								
						Subtotal 2	**6**	**4**
						Total 2 *(Hours of class plus student homework)*	**10**	
TOTAL *(Maximun 83 horas)*							**83**	