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

COURSE: Audio & Visual Analytics		
DEGREE: Degree on Telecommunication Technologies Engineering	YEAR: 4th	TERM: 1st

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. 6,5h)
1	1	Course Presentation Overview of Audio & Visual Analytics		x		Course Presentation Overview of Audio & Visual Analytics (study)	1,66	6,5
	2	Digital audio, Image and video		x		Sampling and quantification. Color models. (Study and practical exercises)	1,66	
2	3	Basic image processing techniques (1)		x		Basic Intensity transformations. Histograms. Histogram Equalization. (Study and practical exercises)	1,66	6,5
	4	Basic image processing techniques (2)		x		Low-pass filters. High-pass filters. Gaussian Filters. Statistical ordered filters. (Study and practical exercises)	1,66	
3	5	Lab Session: Basic image processing techniques (1)		x	Lab 40B01A	Image reading and visualization. Histogram equalization. (Practical implementation in the lab)	1,66	6,5
	6	Lab Session: Basic image processing techniques (2)		x	Lab 40B01A	Edge detection. Template matching. (Practical implementation in the lab)	1,66	
4	7	Image segmentation		x		Threshold- and clustering-based segmentation (study and practical exercises)	1,66	6,5
	8	Feature extraction		x		Shape, texture and color descriptors (study and practical exercises)	1,66	

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5	9	Lab Session: image feature extraction		x	Lab 40B01A	Basic descriptors (Practical implementation in the lab)	1,66	6,5
	10	Speech Production and Audio Perception. Speech and Audio Signals		x		Low-pass filters. High-pass filters. Gaussian Filters. Statistical ordered filters	1,66	
6	11	Speech and audio feature extraction		x		Partial exam #1. Introduction to Image Restoration. Noise. Linear distortion. Noise and linear distortion	1,66	6,5
	12	Lab Session: speech and audio feature extraction		x	Lab 40B01A	Basic descriptors (Practical implementation in the lab)	1,66	
7	13	Dimensionality reduction and feature selection methods		x		Threshold-based segmentation	1,66	6,5
	14	Lab Session: PCA		x	Lab 40B01A	PCA (Practical implementation in the lab)	1,66	
8	15	Non-supervised methods Audio & Visual Analytics		x		clustering-based segmentation. Region Gowing and Splitting	1,66	6,5
	16	Lab Session: audio clustering (1)		x	Lab 40B01A	Audio clustering (Practical implementation in the lab)	1,66	
9	17	Lab Session: audio clustering (2)		x	Lab 40B01A	Audio clustering (Practical implementation in the lab)	1,66	6,5
	18	Supervised methods for Audio & Visual Analytics		x		Threshold- and clustering-based segmentation	1,66	
10	19	Lab Session: face recognition (1)		x	Lab 40B01A	Face recognition (Practical implementation in the lab)	1,66	6,5
	20	Lab Session: face recognition (2)		x	Lab 40B01A	Face recognition (Practical implementation in the lab)	1,66	
11	21	CNNs and their applications in image processing		x		Partial exam #2. Shape descriptors	1,66	6,5
	22	RNNs and thir applications in natural language processing		x		Image classification	1,66	
12	23	Information Retrieval and Filtering systems (1)		x		Region descriptors. Notions of detectors and descriptors	1,66	6,5
	24	Information Retrieval and Filtering systems (2)		x		Final Project (1)	1,66	
13	25	Lab Session: text retrieval systems		x	Lab 40B01A	Text retrieval systems (Practical implementation in the lab)	1,66	6,5
	26	Lab Session: final project (1)		x	Lab 40B01A	Practical development of a simple image or audio (student's choice) analysis system	1,66	

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14	27	Lab Session: final project (2)		x	Lab 40B01A	Practical development of a simple image or audio (student's choice) analysis system	1,66	6,5
	28	Lab Session: final project (3)		x	Lab 40B01A	Practical development of a simple image or audio (student's choice) analysis system	1,66	
	29	Lab Session: final project (4)		x	Lab 40B01A	Practical development of a simple image or audio (student's choice) analysis system	1,66	3,25
						Subtotal 1	**48**	**94**
						Total 1 *(Hours of class plus student homework)*	**142**	
15		Tutorials, handing in, etc					3,6	-
16		Assessment					4	10
17								
18								
						Subtotal 2	**8**	**10**
						Total 2 *(Hours of class plus student homework)*	**18**	
TOTAL (*Maximun 160 horas*)							**160**	