Universidad Carlos III de Madrid
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COURSE: Perception systems		
DEGREE: INDUSTRIAL ELECTRONICS AND AUTOMATION	YEAR: 4	TERM: 1

La asignatura tiene 29 sesiones que se distribuyen a lo largo de 14 semanas. Los laboratorios pueden situarse en cualquiera de ellas. Semanalmente el alumnos tendrá dos sesiones, excepto en un caso que serán tres

WEEKLY PLANNING

WEEK	SESSION	DESCRIPTION	GROUPS (mark X)		SPECIAL ROOM FOR SESSION (Computer class room, audio-visual class room)	Indicate YES/NO If the session needs 2 teachers	WEEKLY PROGRAMMING FOR STUDENT		
			LECTURES	SEMINARS			DESCRIPTION	CLASS HOURS	HOMEWORK HOURS (Max. 7h week)
1									
1	1	Computer Vision applications. Several applications based on Computer Vision will be shown: industrial robot guidance, visual quality control, Computer Graphics, surveillance, computer interaction, mobile phones, etc.			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class	1,66	5
2	2	Course presentation: a detailed explanation will be given of: the course, the student project, the chronogram and the evaluation system. 0. Introduction to Computer Vision, its main application and principal bibliography				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	5

2	3	Opencv Library (I). Introduction to OpenCV; its programing environment in C++ and installation			Computer class room	SI	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	
3	4	2. Digital Images. Concepts of pixel, histogram, color				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
3	5	Opencv (II): How to access the pixel value, obtaining histograms.					Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
4	6	3. Spatial filtering. Spatial convolution and correlation				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
4	7	OpenCV (III): RGB & HSV Color Spaces-colour spaces			Computer class room	SI	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
5	8	4. Image pre-processing (I). Contrast manipulation. Histogram modification.				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
5		Holyday			Computer class room	SI	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
6	9	4. Image pre-processing (II). Noise elimination. Edge enhancement.				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
6	10	OpenCV (V). Noise reduction. Edge detection			Computer	SI	Previous Reading of the topics which are	1,66	5

					class room		going to be explained during the class Program the C++ code with the OpenCV		
7	11	5. Feature extraction (I). Edge detection.				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
7	12	Exam			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
8	13	5. Feature extraction (II): Movement detection.				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
8	14	OpenCV (VI): Motion Detection & Camshift			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
9	15	6. Segmentation. Thresholding, region segmentation							
9	16	OpenCV (VII). Segmentation, Thresholding & Hough Transform			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
10	17	7. Morphological transformations. Binary and grey scale Morphological transformations				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
10	18	OpenCV (VIII). Morphological Transformations			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
11	19	8. Region descriptors.				NO	Previous Reading of the topics which are going to be explained during the class	1,66	5

							Study of the concepts explained during the class		
11	20	OpenCV (IX): region descriptor and Bayes' classifier			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	
12	21	9. Pattern recognition				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
12	22	Exam			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
13	23	9. Pattern recognition				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
13	24	OpenCV (X): region descriptor and Bayes' classifier			Computer class room	NO	Previous Reading of the topics which are going to be explained during the class Program the C++ code with the OpenCV	1,66	5
14	25	Optics/Cameras. The need of an optic and its main parameters; main types of digital cameras and sensors				NO	Previous Reading of the topics which are going to be explained during the class Study of the concepts explained during the class	1,66	
14									
15									
							Subtotal 1	**41,66**	**65**
							Total 1 *(Hours of class plus student homework hours between weeks 1-14)*		

15		Tutorials, handing in, etc							
16		Assessment						3	40
17									
18									
							Subtotal 2	**3**	**40**
							Total 2 *(Hours of class plus student homework hours between weeks 15-18)*	43	

TOTAL *(Total 1 + Total 2. Maximum 180 hours)*	**149,66**