Computer Vision 23/24 – Calendar

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Date	Title and contents (22/23)
19/09/2023 – TP1 19/09/2023 – TP2	Title: Presentation Contents: ● Presentation of the details of the Curricular Unit
21/09/2023 – TP	Title: Topics for the project Contents: ● Presentation of the topics for the project to be carried out ● Creation of working groups for the project
26/09/2023 – TP1 26/09/2023 – TP2	Title: TP1 – Image formation Contents: ● Introduction to Computer Vision ● Human visual system ● Image capture systems
09/28/2023 – TP	Title: TP2 – Frequency space Contents: ● Fourier transform ● Frequency space ● Spatial convolution
10/03/2023 – TP1 10/03/2023 – TP2	Title: TP3 – Digital Images Contents: ● Sampling and quantization ● Data structures for digital imaging
10/05/2023 – TP	Holiday – Implantation of the Republic
10/10/2023 – TP1 10/10/2023 – TP2	Title: TP4 – Color and noise Contents: ● Color spaces ● Color processing ● Noise
12/10/2023 – TP	Title: TP5 – Single Pixel Manipulation Contents: ● Dynamic range manipulation ● Neighborhoods and connectivity ● Image arithmetic
10/17/2023 – TP1 10/17/2023 – TP2	Title: TP6 – Spatial filters Contents: ● Spatial filters

	● Filtering in the frequency domain ● Edge detection ● Morphological filters
10/19/2023 – TP	Title: TP7 – Pattern Recognition Contents: ● Introduction to pattern recognition ● Statistical pattern recognition and machine learning ● Visual descriptors ● Local invariant descriptors
10/24/2023 – TP1 10/24/2023 – TP2	Title: TP8 – Statistical classifiers Contents: ● Statistical classifiers ● Generalization ● Regularisation ● Overfitting ● Cross-validation
10/26/2023 – TP	Title: TP9 – Introduction to deep learning Contents: ● What is deep learning? ● Convolutional neural networks ● Deep neural network architectures
10/31/2023 – TP1 10/31/2023 – TP2	FCUP Activities (no classes)
02/11/2023 – TP	FCUP Activities (no classes)
07/11/2023 – TP1 07/11/2023 – TP2	Title: TP10 – Introduction to Segmentation Contents: ● Introduction to segmentation ● Thresholding ● Region-based segmentation ● Segmentation by clustering
11/09/2023 – TP	Title: TP11 – Advanced Segmentation Contents: ● Segmentation by fitting ● Active contours ● Semantic segmentation
11/14/2023 – TP1 11/14/2023 – TP2	Title: Support for the implementation of the project
11/16/2023 - TP	Title: TP12 – Object detection using deep learning Contents: ● Object Detection ● Location and Classification ● Instance segmentation
21/11/2023 – TP1	Title: Support for the implementation of the project

11/21/2023 – TP2	
11/23/2023 - TP	Title: TP13 – Generative Models Contents: ● Auto encoders ● Variational autoencoders ● Generative adversarial networks
28/11/2023 – TP1 28/11/2023 – TP2	Title: Support for the implementation of the project
30/11/2023 – HCMC	Title: TP14 – Explainable AI Contents: ● Saliency Maps ● Class activation maps ● Grad-CAM and other examples
05/12/2023 – TP1 05/12/2023 – TP2	Title: Support for the implementation of the project
07/12/2023 – TP	Title: TP15 – Attention Contents: • Recurrent Neural Networks • Transformers
12/12/2023 – TP1 12/12/2023 – TP2	Title: Public presentations of the projects developed
12/14/2023 – TP	Title: Public presentations of the projects developed

Classes taught by Prof. Miguel Coimbra
Classes taught by Prof. Hélder Oliveira