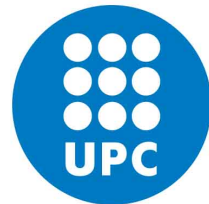


# Computer Vision course

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## IMAGE PREPROCESSING

0	0	0	0	0
0	2	1	2	0
0	5	0	1	0
0	1	7	3	0
0	0	0	0	0

X

0.5	0.7	0.4
0.3	0.4	0.1
0.5	1	0.5

W

\*

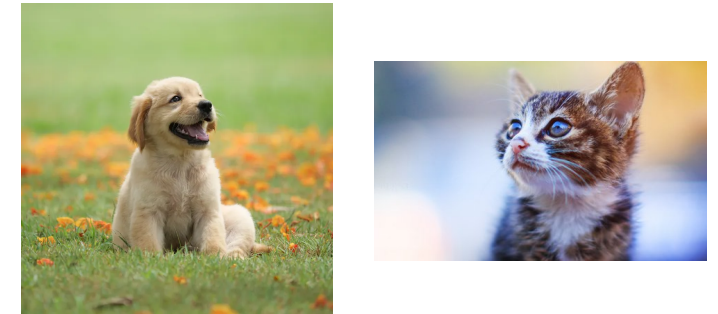
- Basic handling (math operations, reshape, logical masks)
- Filtering methods (Spatial, morphological, frequency)

## IMAGE SEGMENTATION



- Pixel clustering (unsupervised)
- Pixel classification (supervised)
- Deep Learning (Encoder-Decoder)

## IMAGE CLASSIFICATION



- Extraction of regional features
- Region-based features (Traditional ML)
- Deep Learning (CNNs)

# Contents

## **Introduction to image processing (5 hours):**

Basic image handling and preprocessing. Spatial (convolutional) filters, morphological operations, filters in the frequency domain.

## **Image segmentation (5 hours):**

Unsupervised segmentation using clustering algorithms. Supervised methods using pixelwise classifiers.

## **Image classification (5 hours):**

Extraction of regional features. Texture analysis and entropy. Region-based supervised classifiers. PCA Eigenfaces.

## **Introduction to deep learning (5 hours):**

Convolutional neural networks for image classification. Segmentation using Convolutional Neural Networks.

# Course materials



**GitHub**

[https://github.com/raulbenitez/Tirana\\_CV](https://github.com/raulbenitez/Tirana_CV)

