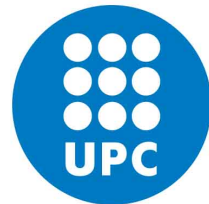


Computer Vision course

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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

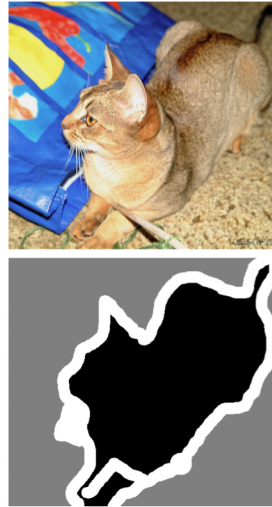
| | | |
|-----|-----|-----|
| 0.5 | 0.7 | 0.4 |
| 0.3 | 0.4 | 0.1 |
| 0.5 | 1 | 0.5 |

W

*

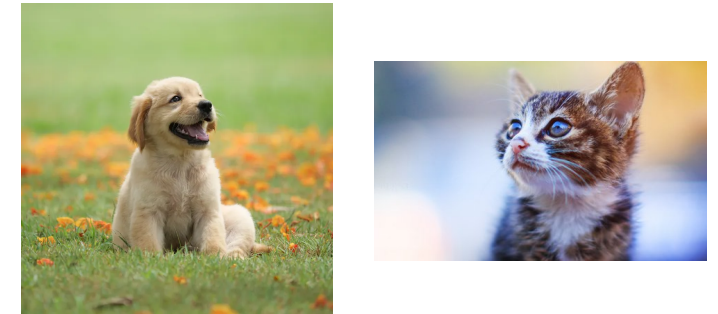
- Basic handling (math operations, reshape, logical masks)
- Filtering methods (Spatial, morphological, frequency)

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 (4 hours):

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

Image segmentation (4 hours):

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

Image classification (4 hours):

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

Introduction to deep learning (4 hours):

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

Course materials



GitHub

https://github.com/raulbenitez/Tirana_CV

