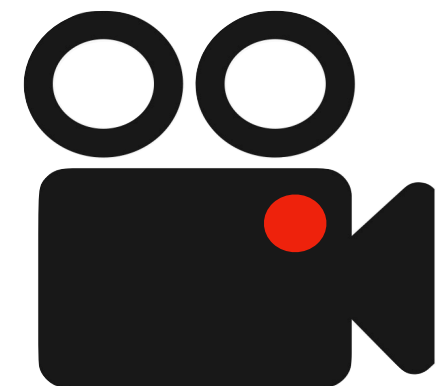
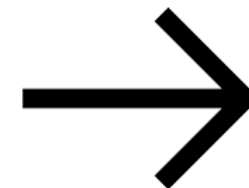
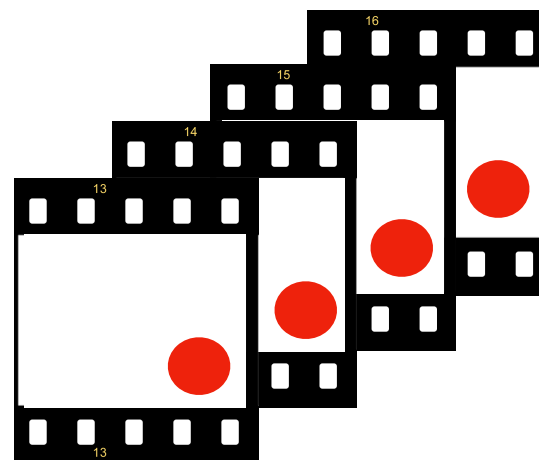
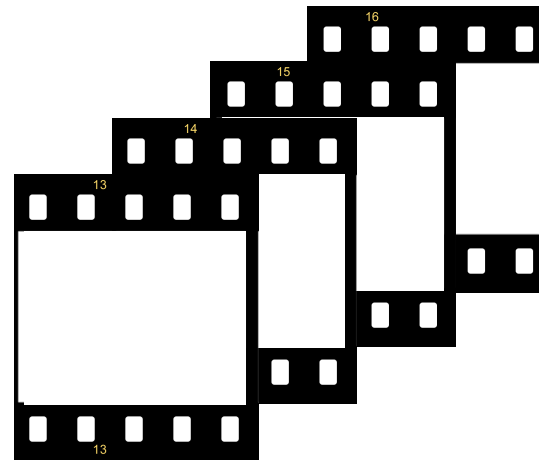
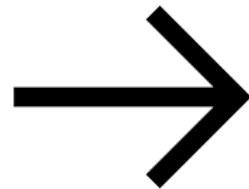
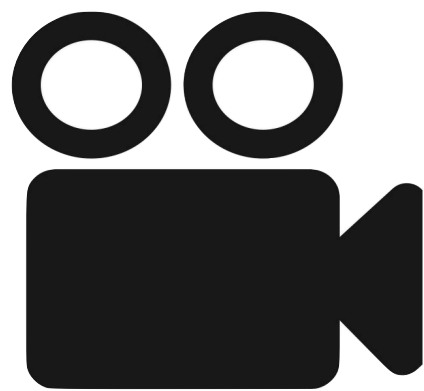


A high performance video segmentation framework

Liudmila Karagyaour
Lorenzo Ferri
Vanessa Braglia

Idea



Clustering

with k-means

Iteratively minimise the distance between each point and the **centroids**

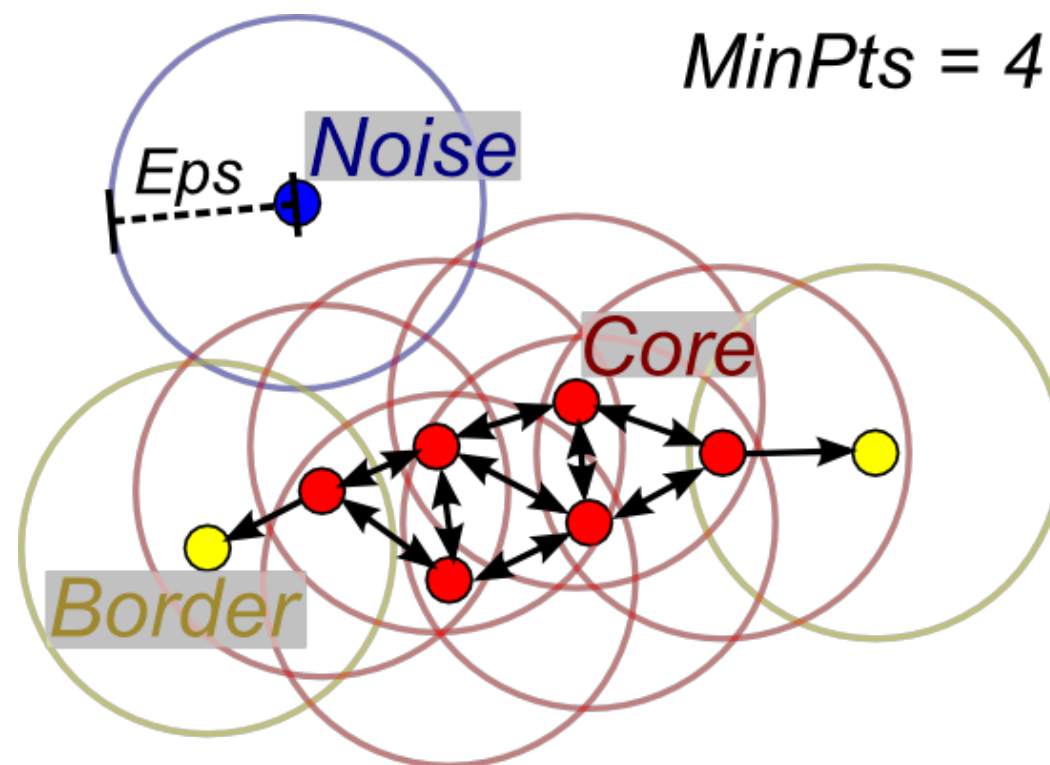
$$\arg \min_j D(x_i, c_j) \quad j = 1, \dots, k$$

and compute the new **centroids** by the mean of the clusters

$$c_j = \frac{1}{n_j} \sum_{x_i \in C_j} x_i$$

Clustering

with DBSCAN



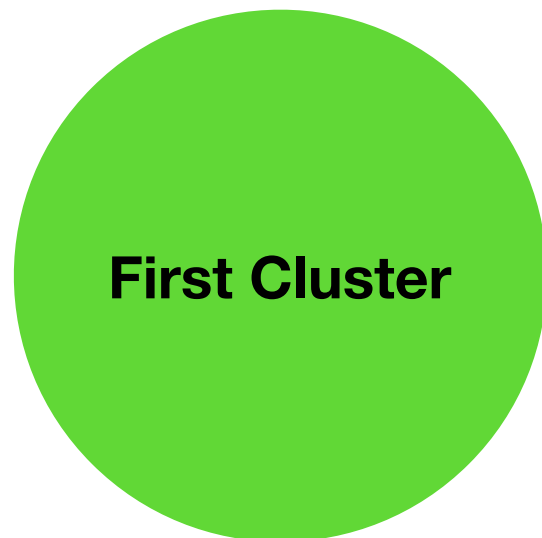
The **core** points together with the **border** points will form the clusters. The **noise** points will be discarded.

Clustering

with Spectral partitioning

This algorithm need the laplacian matrix of the image.
The second smallest eigenvector **x2** is then used to create the clusters.

If $x_2(p) < 0$



If $x_2(p) > 0$

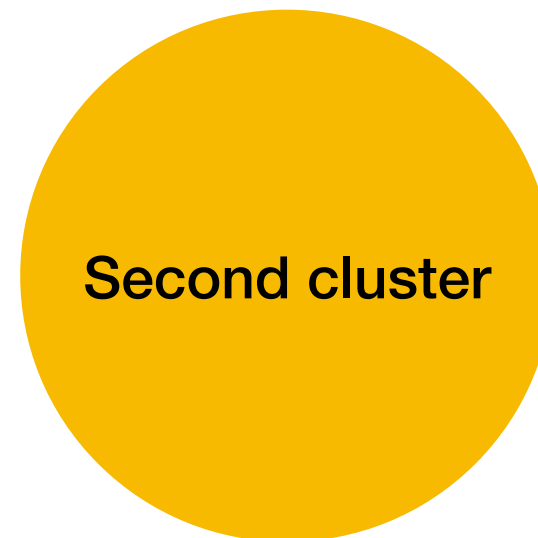
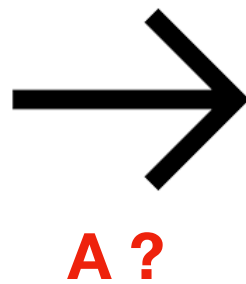


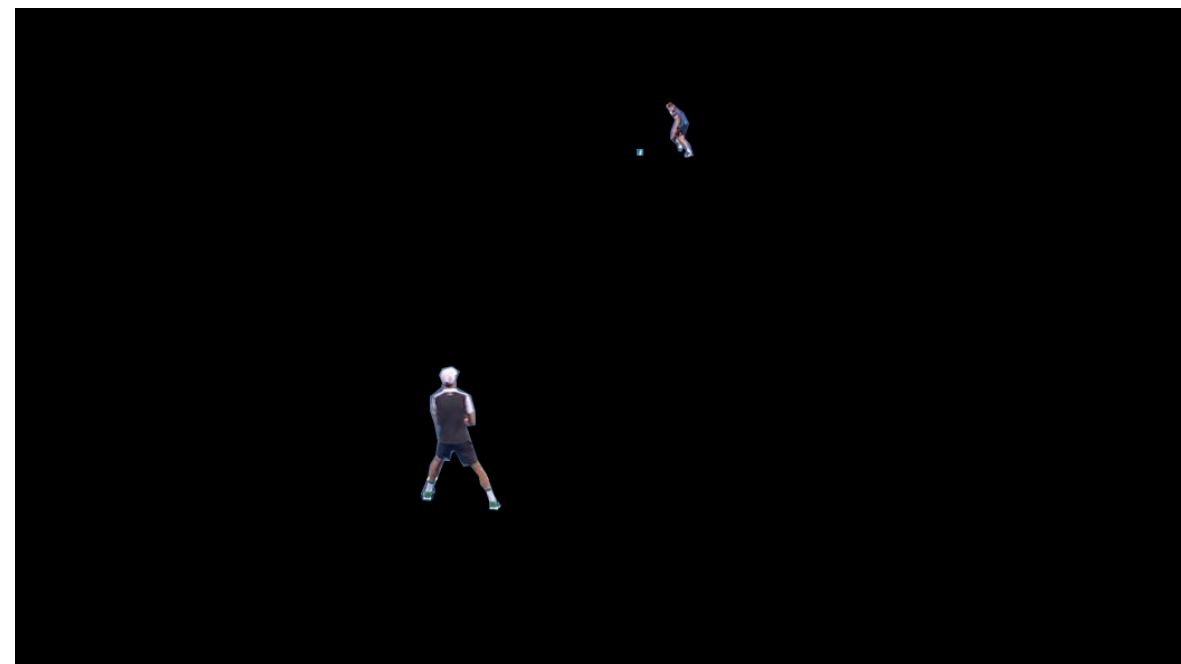
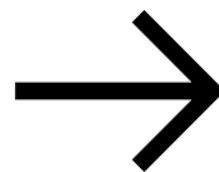
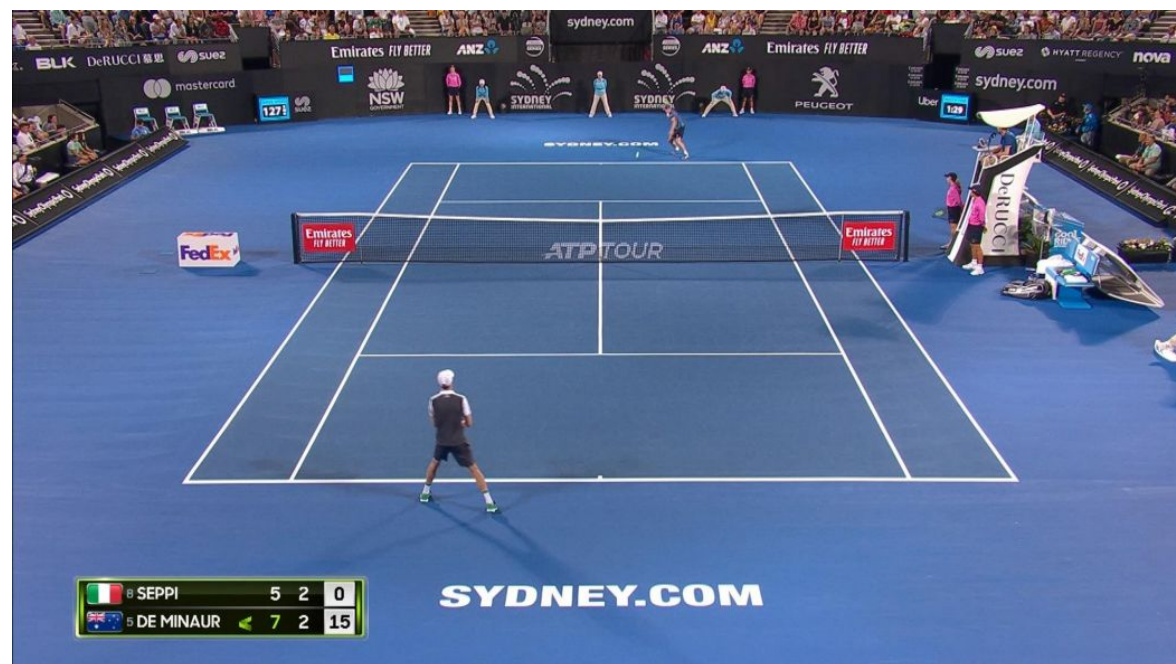
Image Sharpening



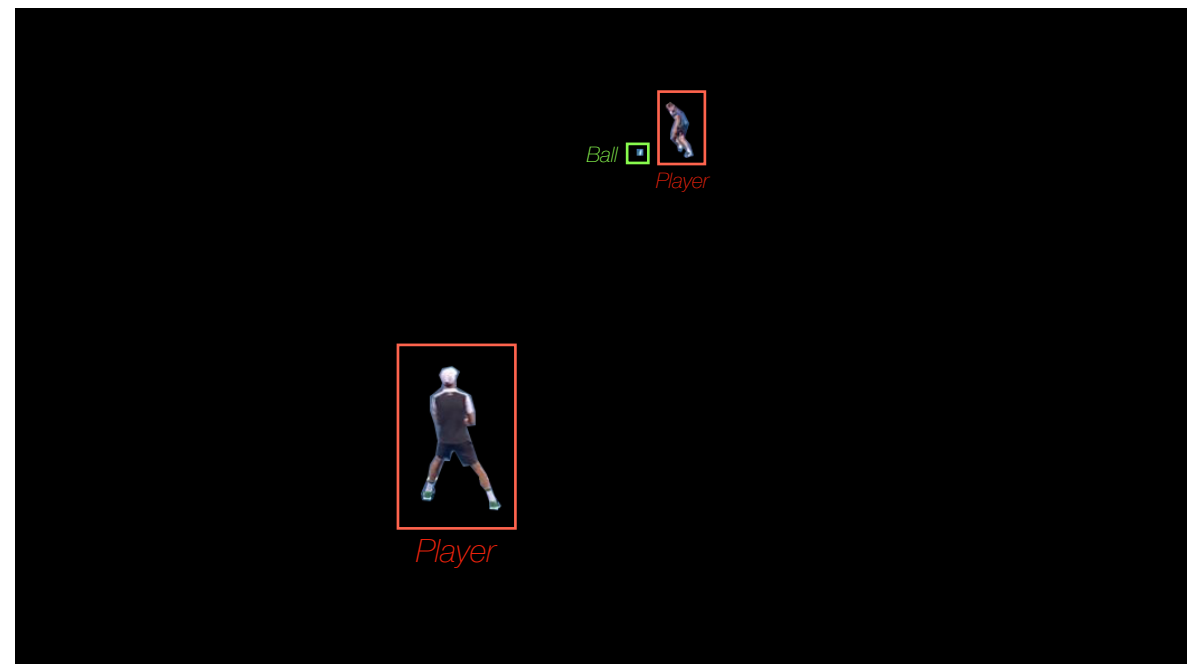
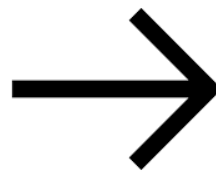
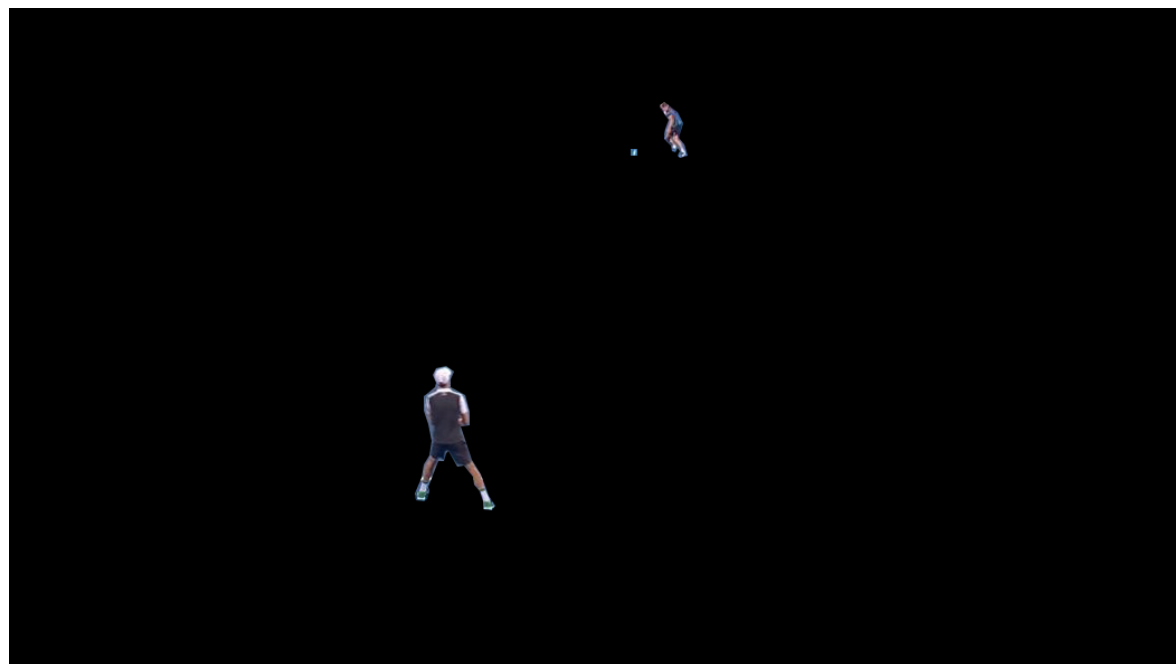
$$A \vec{x} = \vec{b}$$

The diagram illustrates the linear system $A \vec{x} = \vec{b}$. A blue line connects the vector \vec{b} (labeled in blue) to the right-hand side of the equation. A green line connects the vector \vec{x} (labeled in green) to the left-hand side of the equation. The matrix A is labeled in red.

Feature Extraction



Machine Learning



Parallelising

