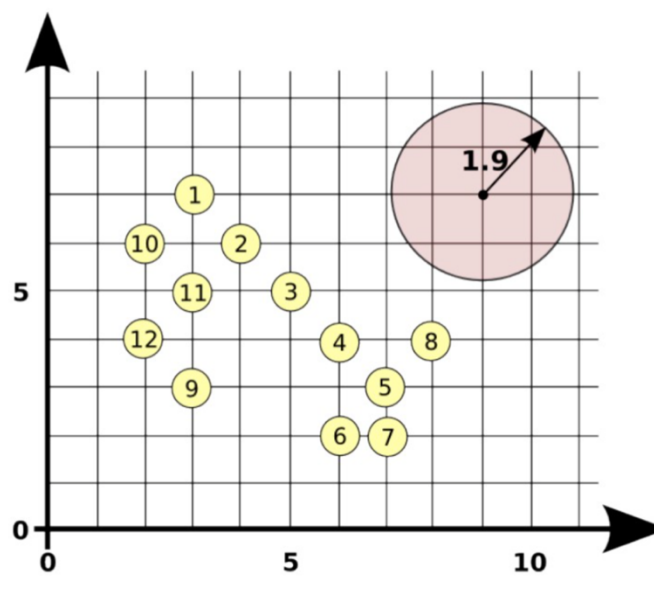


Machine Learning

Practical Sheet 7: Unsupervised Learning

1. Consider the dataset below. Apply the DBSCAN algorithm with $\epsilon = 1.9$ and $\text{minPoints}=3$. Start by discriminate between “Core”, “Border” and “Noise” points. Finally, indicate the clusters obtained.



2. Consider the “[AR.zip](#)” dataset, available at the course web page. It contains 3,315 images, of 136 subjects, each one represented in the RGB color space and having dimensions 576 (rows) x 768 (columns). Create a “Python” that:
 - a) Load the set of images;
 - b) Divide the set into two disjoint parts: “learning” and “test”;
90% for learning, 10% for test, randomly chosen;
 - c) Obtain a **SOM** manifold;
 - d) Find the **SOM** topology that is more appropriate for distinguishing between...
 1. Identities
 2. Gender