

# Artificial Intelligence

## Practical Sheet 8: Unsupervised Learning



1. Consider the “[AR.tar](#)” dataset, available at the course web page. It contains 3.315 [48 x 64] face images, represented in RGB color space. In this setting, each image is actually a 48 x 64 x 3 (R+G+B) array.

The goal of this exercise is to check whether an unsupervised learning algorithm can be used to distinguish between Ids in the dataset and also between “Male” and “Female” genders. In order to do that, follow the steps below:

Implement a “Python” script that:

- a. Loads the set of images;
- b. Divide the set into two disjoint parts: “learning” and “test”; (90% for learning, 10% for test, randomly chosen)
- c. Builds a **SOM** manifold.
- d. Check which SOM topology is appropriate in distinguishing between:
  - i. Identities;
  - ii. Gender.