Heinrich Heine Universität Düsseldorf

HEIDERLAB

ML - 2023/2024
Exercise 3 - Team 47359
Feedback

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Task 1. (4.5/5 points). Correct scores and loadings. Contains an appropriate plot of the result. An own calculation of the explained variance is missing (-0.5 points).

Task 2. (3/3 points). In this exercise, you should have used PCA to obtain the coordinate matrix via Singular value decomposition of the double centered and squared Euclidean distance matrix. However, this wasn't all clear from the task but note that **Scikit-Learn** does not perform classical Multi-dimensional scaling (PCoA). If you look into the documentation, you'll see that `sklearn.manifold.MDS` uses a bound optimization algorithm called SMACOF and therefore a different objective, called the stress (classical MDS minimizes the strain). You also print the final value of the stress (sum of squared distance of the disparities and the distances for all constrained points) in one cell.

Task 3. (2/2 points).

(a) (1/1) Correct, classical MDS is equivalent to PCA.

(b) (1/1) Correct, you can also use a SCREE-plot to find the most meaningful number of components.