

1. Given the data visualized below with the classes represented by different colors, should PCA or kernel PCA be used, and why?

1 / 1 point



- ☐ PCA because the data is clearly separable when projected onto a lower dimension.
- ☐ Either is fine because the two classes are clearly separable.
- ☐ Neither because the data cannot be projected onto a lower dimension.
- ☒ Kernel PCA because the data is not linearly separable.

Correct! If the data is projected directly onto a lower dimension, the different classes cannot be clearly separated with a single plane. Hence, we use a kernel function to map it to a higher dimension first, before applying PCA.

2. How does the goal of MDS (Multidimensional Scaling) compare to PCA?

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- ☐ Both MDS and PCA try to preserve variance within data.
- ☒ MDS tries to maintain geometric distances between data points, whereas PCA tries to preserve variance within data.

Correct! Although both are dimensionality reduction techniques, MDS will not strive to maintain the variance within the original data.

- ☐ Both MDS and PCA try to to maintain geometric distances between data points.
- ☐ PCA tries to maintain geometric distances between data points, whereas MDS tries to preserve variance within data.

3. (True/False) If the number of components is equal to the dimension of the original features, kernel PCA will reconstruct the data, returning the original.

1 point

- ☐ False
- ☒ True

Incorrect. Please review Practice lab: Kernel PCA.