

1. PCA is technique for... (**Note:** you can select multiple answers)

- ☒ dimensionality reduction
- ☐ data augmentation
- ☒ feature extraction
- ☐ variance normalisation

2. When performing PCA we want to:

- ☐ find orthogonal vectors
- ☐ estimate the number of dimensions
- ☒ find the most meaningful basis
- ☐ find the components of the dataset

3. Every observation (i.e. a vector with dimensionality m) in the dataset can be represented as:

- ☒ linear combination of some basis vectors
- ☐ unit vectors
- ☐ linear combination of some unit vectors
- ☐ a set of orthonormal vectors

4. We assume that the signal of interest is

- ☐ along the direction with the largest average
- ☒ along the direction with the largest variance
- ☐ along the direction with the smallest variance
- ☐ along the direction of one of the naive basis vectors

5. One of the key ideas for solving PCA with eigenvalue decomposition is that a symmetric matrix can be diagonalized by an orthogonal matrix of its eigenvectors.

- ☒ True
- ☐ False

6. If p_1 and p_2 are both principal components vectors, what statements are correct about them? **Note:** you can select multiple answers

- ☒ p_1 is orthogonal to p_2
- ☐ p_1 is parallel to p_2
- ☒ variance along p_1 is bigger than variance along p_2
- ☐ variance along p_2 is bigger than variance along p_1

