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### readme

The python script (kkhuiaa\_20123133\_code.py) is assumed to be run in the current working directory, while the images are inside the subdirectory of your pwd.

Solution approach:

1. Apply Keras pre-trained deep learning models for image, which are VGG16, VGG19, VGG19.
2. Different parameters, such as different keras pre-trained model, input size, PCA n\_component (ratio of explained\_ratio) are tested by inertia score in minibatchkmean.
3. We apply Incremental PCA and minibatchkmean since they are faster than normal PCA and kmean.
4. Once best parameter is selected, number of cluster is selected based on inertia score and silhouette score.