Quiz Feb. 11

273A
• Check out the following clustering result:

A) This result can be obtained by running K-means.

B) This result cannot be obtained by k-means alone. However, it can be obtained by first performing a kernel-PCA and then k-means.

C) This result cannot be obtained by any of the two procedures above because the data do not cluster into blobs. One needs more sophisticated methods for this.
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• When combining weak learners in boosting: \( f(x) = \sum_{r} \alpha_r h_r(x) \), the value of \( \alpha_r \) cannot get negative. If it does, the exponential loss will increase instead of decrease.

A) True

B) False
• Adaboost is

A) Sensitive to “outliers” (hard to classify examples). The reason is that it fits too aggressively.

B) Sensitive to outliers because the exponential loss penalizes them too harshly.

C) Insensitive to outliers because boosting fits a very weak classifier at every round and therefore fits very slowly.

D) Insensitive because the exponential loss effectively ignores outliers.
• If in round “r” of Adaboost we use a learner $h(x)$ that separates the dataset perfectly, then this classifier would receive infinite weight in the ensemble.

A) True

B) False