

## Exercise 2 Questions(4 points)

1. Can SVM be used for unsupervised clustering or data dimension reduction?  
Why?
2. What are the strengths of SVMs; when do they perform well?
3. What are the weaknesses of SVMs; when do they perform poorly?
4. What makes SVMs a good candidate for the classification / regression problem, if you have enough knowledge about the data?

1. SVM can not be used for unsupervised clustering, because it needs the true label to construct a split plane. And, SVM can not be used for data dimension reduction, because it usually needs to level up the dimension of the dataset to achieve a better plane for splitting.

2. The strengths of SVM are:

- The precision of classification is high and the ability to generalization is great.
- There are many kernel functions to use, so it can handle many non-linear problems.

When the amount of dataset is not large, the SVM usually performs well.

3. The weaknesses of SVMs are:

- Really sensible of the absence of data.
- Hard to choose a kernel function from various functions.

When the amount of dataset is large, the SVM usually performs badly.

4. When the amount of dataset is not large, there are not too many absent data, and the dimension of data is relatively high, the SVM is a good candidate for the classification.