Machine Learning

Lecture 16: Support Vector Machines (SVM)

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Course Teacher

Dr. Mrinal Kanti Baowaly

Associate Professor

Department of Computer Science and Engineering, Bangabandhu Sheikh Mujibur Rahman Science and Technology University, Bangladesh.

Email: baowaly@gmail.com

Support Vector Machines (SVM)

- SVM is one of the most popular and widely used supervised machine learning algorithms

- It offers very high accuracy compared to other classifiers such as logistic regression, decision trees, and Naïve Bayes.

- It can be employed in both types of classification and regression problems.

Applications of SVM

- Face detection

- Intrusion detection

- Classification of emails, news articles and web pages

- Classification of genes

- Handwriting recognition

The core idea of SVM

The core idea of SVM is to find a maximum marginal hyperplane(MMH) that best divides the dataset into classes (hence also known as a discriminative classifier).
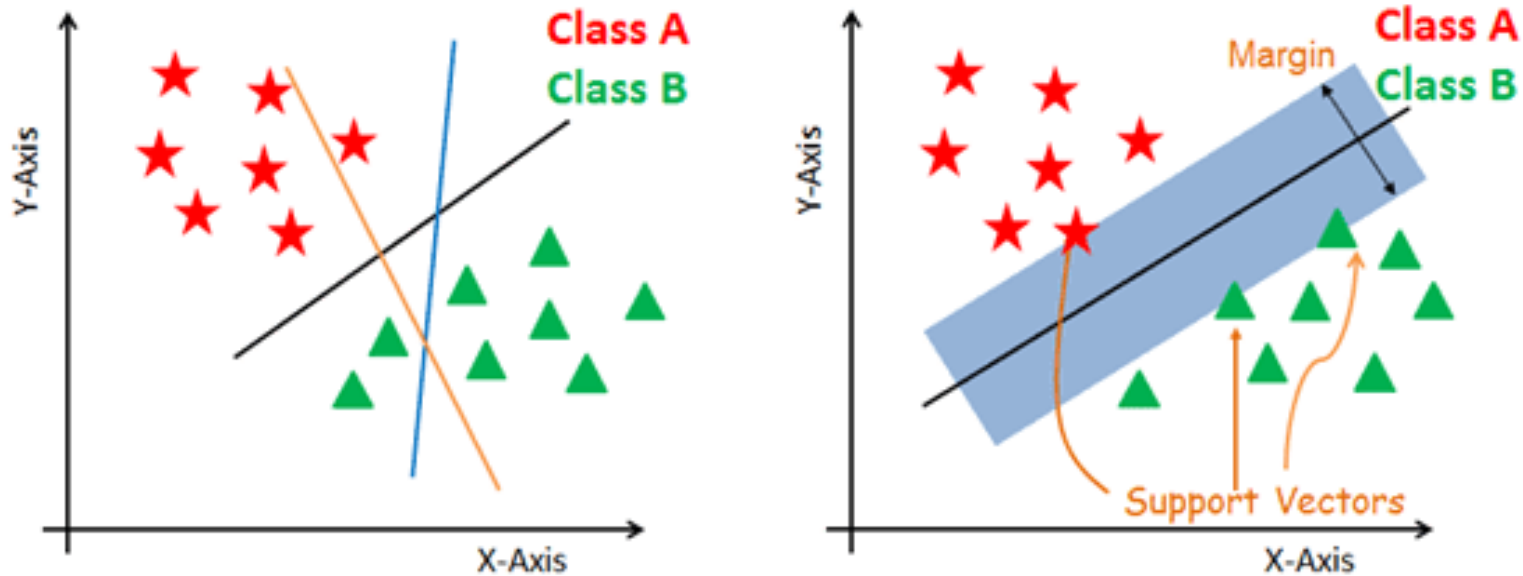
Support Vector Machines (Cont.)

- Support Vector Machines

- How does it work?

- Kernels

- Classifier building in Scikit-learn

- Tuning Hyperparameters

- Advantages and Disadvantages

Source: Study from DataCamp

How to Identify the right hyper-plane?

- Select the hyper-plane which segregates the classes better

- Select the hyperplane for which the margin is maximum

- SVM selects the hyper-plane which classifies the classes accurately prior to maximizing margin

Detail: Study from AnalyticsVidhya

HW

Why does SVM select the hyperplane for which the margin is maximum?

Or

Why does SVM maximize the margin?

Study Materials of SVM

- [Support Vector Machines with Scikit-learn](#)

- [Support Vector Machines (SVM)](#)

- [SVM using Scikit-Learn in Python](#)