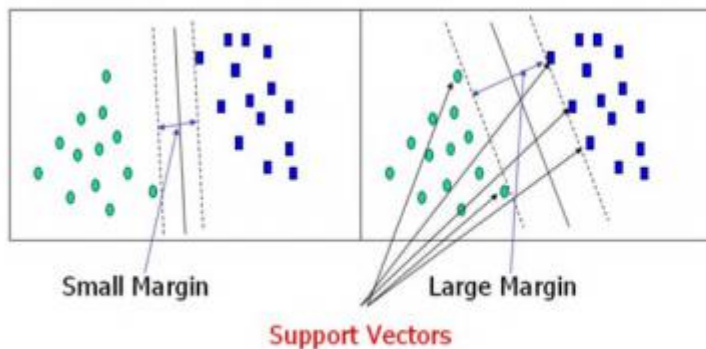
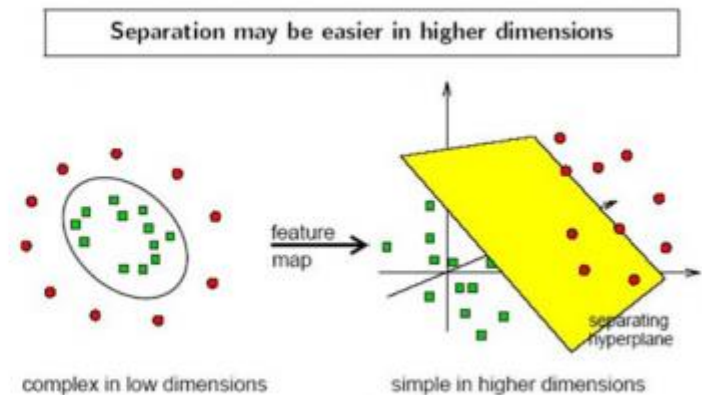


# **Introduction to Support Vector Machines**

- SVM은 고차원 또는 무한차원의 공간에서 초평면을 찾아서 분류와 회귀를 수행
- 자료를 가장 잘 분리하는 초평면은 Train Data 간의 거리가 가장 먼, 마진이 가장 큰 초평면을 분류기로 사용할 때
- 선형분류 뿐만 아니라, 커널트릭(Kernel Trick)이라는 다차원 공간상으로 맵핑(mapping) 기법을 사용하여 비선형분류도 수행

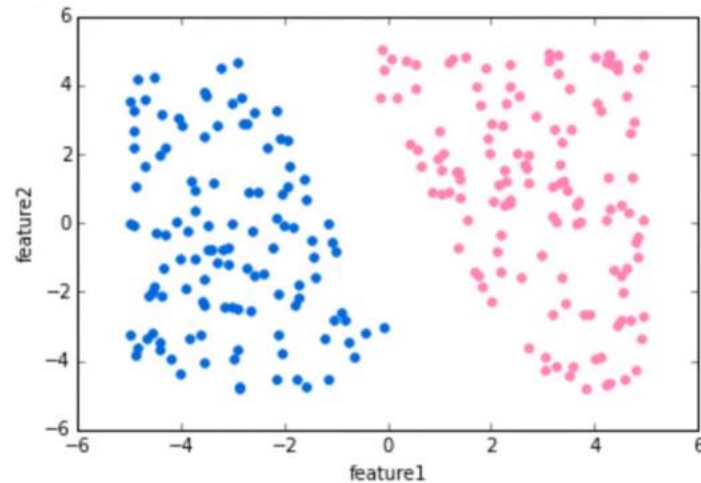


선형분류

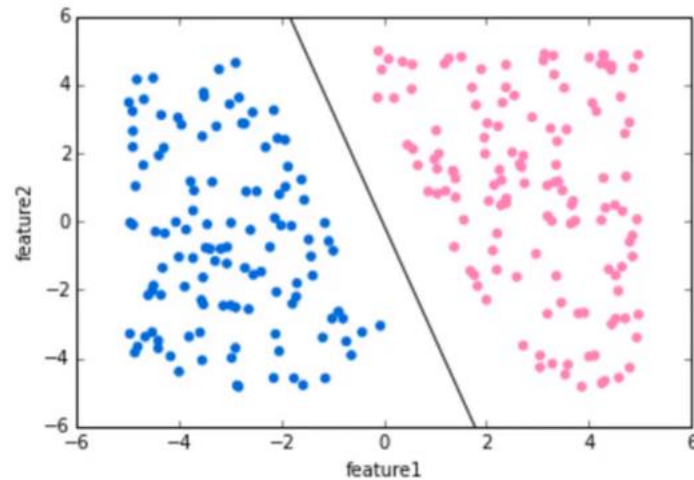


비선형분류

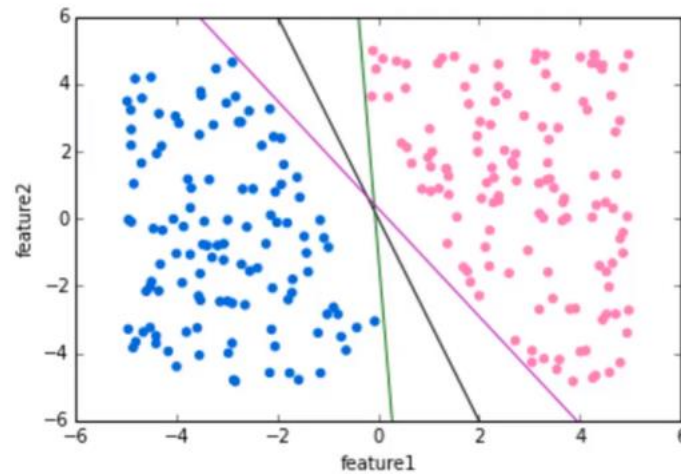
Let's show the basic intuition behind SVMs. Imagine the labeled training data below:



We can draw a separating “hyperplane” between the classes.

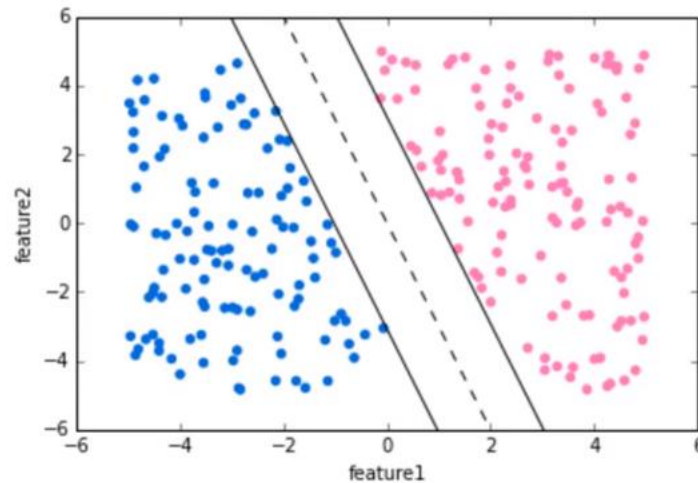


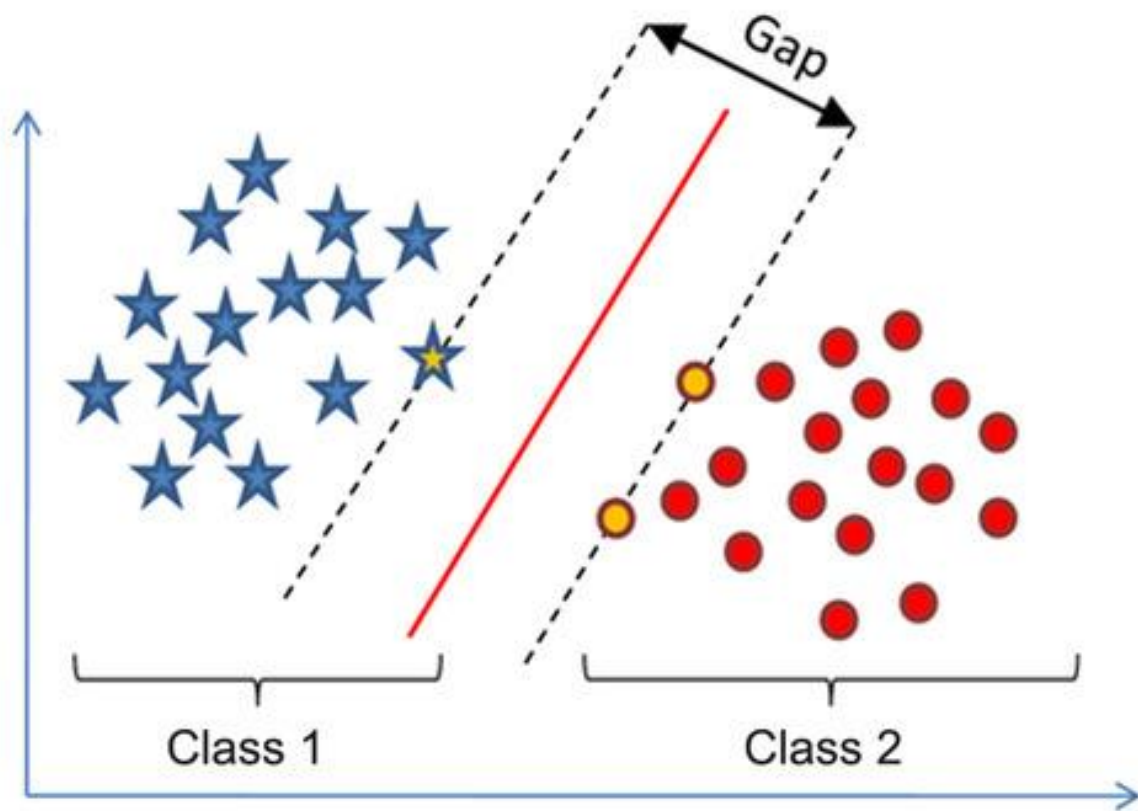
But we have many options of hyperplanes that separate perfectly...



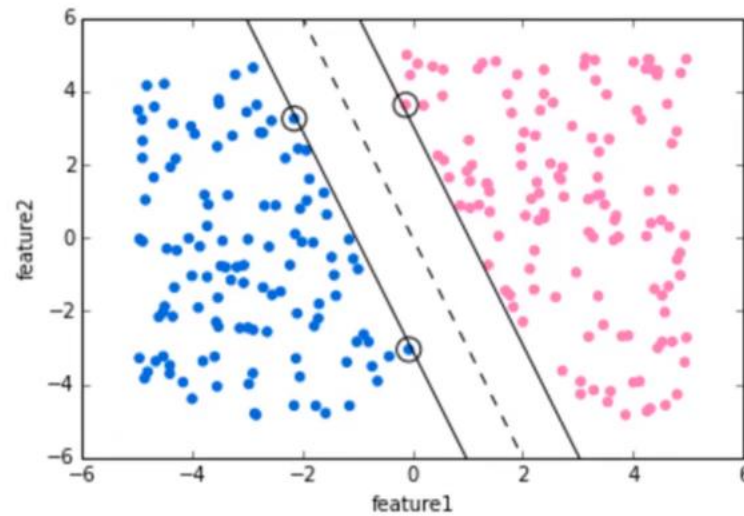
마진을 최대화하는 경계면을 찾자.

We would like to choose a hyperplane that maximizes the margin between classes

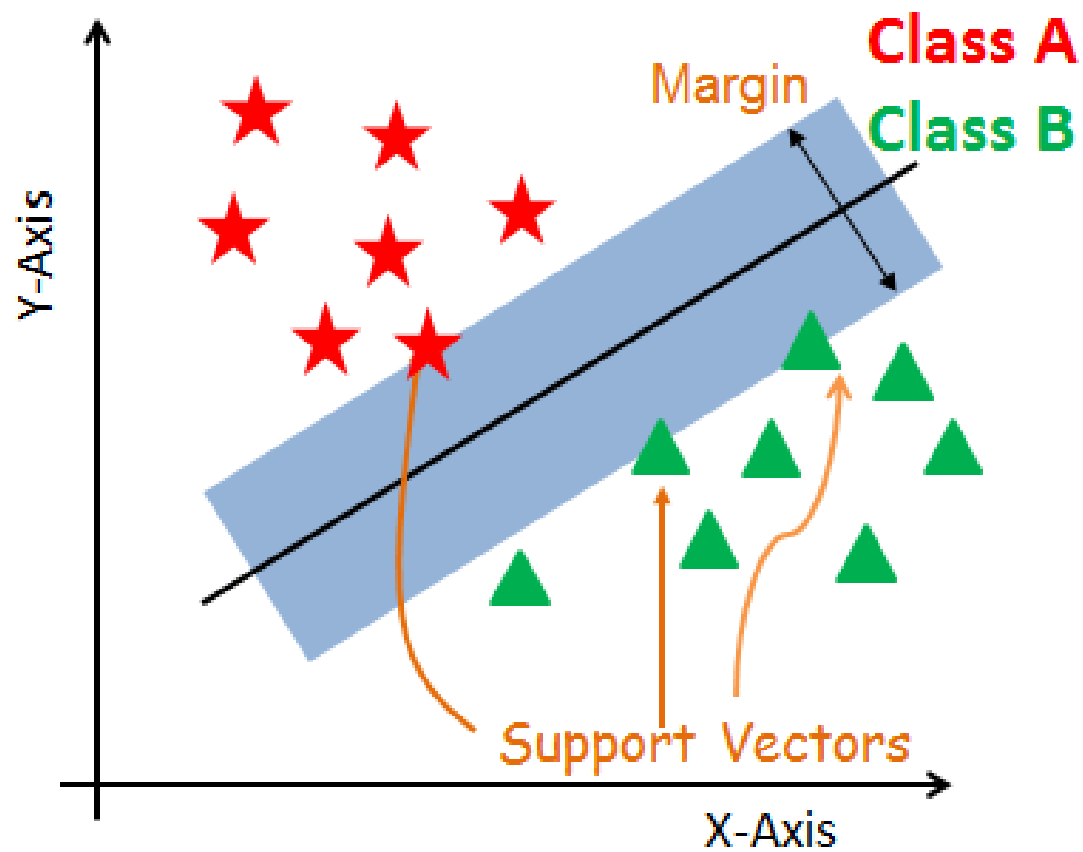




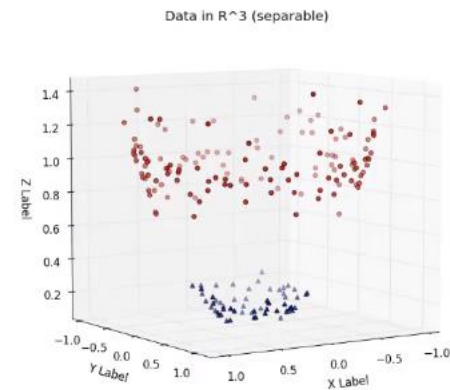
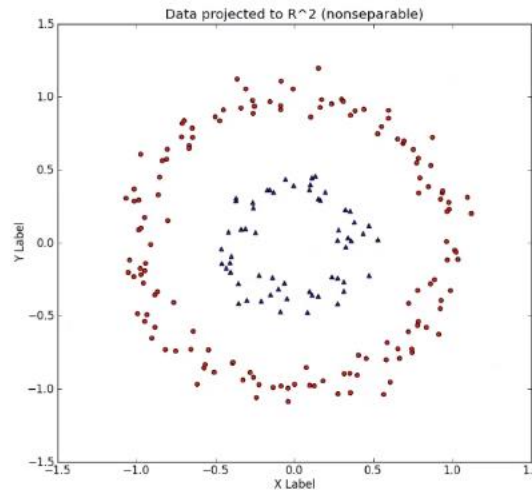
The vector points that the margin lines touch are known as Support Vectors.







We can expand this idea to non-linearly separable data through the “kernel trick”.



Check out YouTube for nice 3D Visualization videos explaining this idea. Refer to reading for math behind this.

