CHAPTER 22

Support Vector Machines

Support vector machine (SVM) is a machine learning algorithm for learning classification and regression models. To build intuition, we will consider the case of learning a classification model with SVM. Given a dataset with two target classes that are linearly separable, it turns out that there exists an infinite number of lines that can discriminate between the two classes (see Figure 22-1). The goal of the SVM is to find the best line that separates the two classes. In higher dimensions, this line is called a hyperplane.

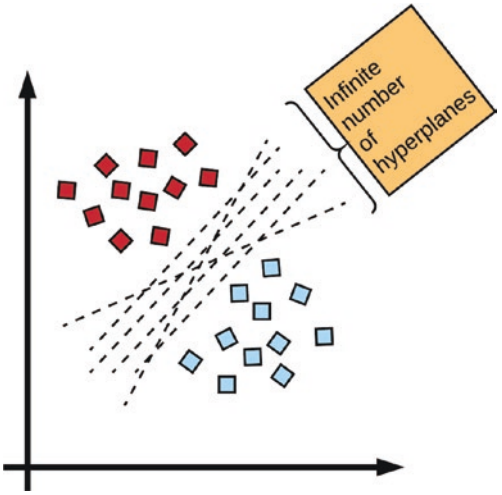

Figure 22-1. *Infinite set of discriminants*

What Is a Hyperplane?

A hyperplane is a line or more technically called a discriminant that separates two classes in n-dimensional space. When a hyperplane is drawn in 2-D space, it is called a line. In 3-D space, it is called a plane, and in dimensions greater than 3, the discriminant is called a hyperplane (see Figure 22-2). For any n-dimensional world, we have n-1 hyperplanes.

E. Bisong, *Building Machine Learning and Deep Learning Models on Google Cloud Platform*,
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