<https://www.analyticsvidhya.com/blog/2015/10/understaing-support-vector-machine-example-code/>

Title of the Article: Understanding Support Vector Machine algorithm from examples  
Name of Journal, Date of Publication: Understanding Support Vector Machine algorithm from examples, October 6th, 2015  
Primary Author(s): Sunil Ray

<http://machinelearningmastery.com/support-vector-machines-for-machine-learning/>

Title of the Article: Support Vector Machines for Machine Learning  
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Primary Author(s): Jason Brownlee

Summary of the background

Support Vector Machine works better on smaller datasets but can do much stronger and powerful building models. Support Vector Machine (SVM) is a “supervised machine learning algorithm which can be used for both classification or regression challenges.” Here, we plot the data item as a single point in some dimensional space. After, we classify those points by finding hyper-plane that can differentiate the two different categories.

Summary of the objectives

Hyperplane, a line that splits the input from the users, is selected in SVM to separate the points in the input by class 0 or 1. In a two-dimensional plane, there can be an equation that states B0 + B1\*X1 + B2\*X2 = 0. Here, B1, B2, and the intercept B0 can be found by the learning algorithm. If the evaluated point is above the line, it goes into class 0 while if the point is below the line it goes to class 1. Margin is referred as the distance between the line and the closest data point. The margin is “calculated as perpendicular distance from the line to only the closest points. Only these points are relevant in defining the line and in the construction of the classifier. These points are known as the support vectors.

Summary of the discussion

SVM algorithm can be done by transforming problem using linear algebra. A linear SVM can be rephrased using inner product of two observations. For example, [2,3] and [3,4] = 2\*3+3\*4=6+12=18. The equation for making the prediction is f(x)= B0(intercept) + sum(ai\*(x,xi)). This equation involves calculating the inner products of input vector (x) with support vectors in training data. There are many types of kernel, which include linear, polynomial, and radial kernel SVM. For SVM, every input should be numeric. This means that if the user does not want to input a numeric value, he/she should convert the category into binary variables since computers work in binary conversion.

What did you learn from the article? What is most pertinent for your research?

From this article, I learned that support vector machine can divide the two inputs that the user wants to classify by dividing it into class 0 or class 1. In addition, I learned that computer science is related to linear algebra and that the equation for making prediction in SVM is done in simple mathematical way.

What questions do you have about the content that remain unanswered?

After reading this article, I wondered about where do computers use support vector machine? What does support vector machine allow computers do? What can computers do with a line that separates two variables? What happens when they fail to draw a line that divides the two types of input?