Question 1: SVM

An SVM works by trying to draw a plane that separates two or more distinct sets of data. It tries to maximize the distance between the plane and the support vectors, which are points of data that are closest to the plane. There are many different planes in which data can be transformed to create a distinct boundary. These are called kernel functions. The standard linear kernel, which simply takes the dot product of the two values (X1 and X2) is sufficient for this classification task, however there are other kernels available (polynomial, gaussian, rbf, etc.).

accuracy: 98.3%, precision: 1.0, recall: 1.0, f1: 1.0

[[114, 2], [0, 0]] – Decision Matrix

Compared to the results from the logistic regression model from homework 3, these scores are superior across the board. With respect to PCA feature extraction and the k value (the amount of features that are kept from the input data), the full 30 features seems to perform the best. Changing the amount of features to any value other than the full 30 features decreases the quality of the resulting model.

Question 2: SVR

Repository: [Anu78/intro-to-ml-hw: homework for ECGR-4105 @ uncc (github.com)](#)