AI Homework 4

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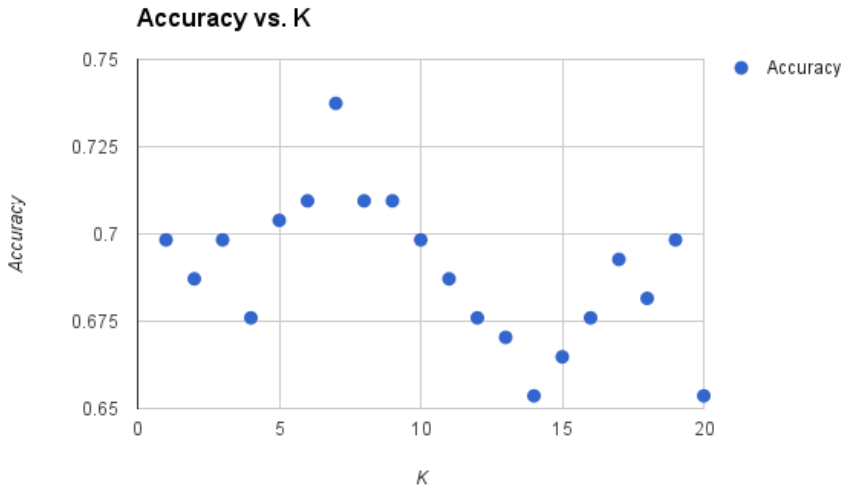
The best k value was $k = 7$, with an accuracy probability of 0.73743.



1 Compiling and Executing

I suppose open `main.cc` in Visual Studio. Click the run button.

2 Description

The tradeoffs between the value of k and the accuracy has to do with the number of samples and the size of the dataset. Since I calculated the distance between every node and the testing node before taking the first k nodes and averaging means that because of my hugely inefficient approach, there is no further penalty in performance of averaging more k (there is, but it is an add-loop, which is extremely minimal). What one wants to do is take the maximum k nodes in a locality, which depends highly upon the size of the dataset, and would benefit from wieghting the data. One could hypothesize that a k equal to the size of

the dataset and weighted properly would produce the best results, but since the weighting would make some nodes (far away) have a very small effect, the best approach would be to have a variable k which lops off such insignificant weighted nodes.

The static k really only works well with a very dense homogenized dataset. Sets with different sparsenesses would work poorly.