

ECE 532 Update 1

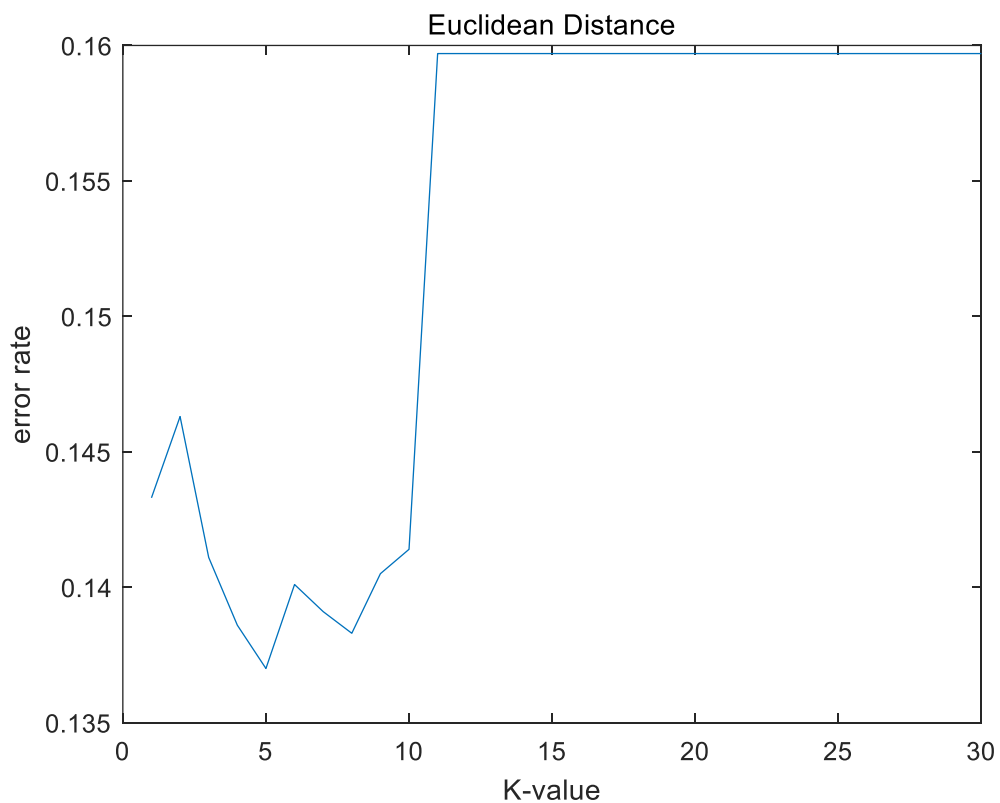
Date: Dec – 1 - 2020

Github Repository link: [lubyant/ECE532_CourseProject](https://github.com/lubyant/ECE532_CourseProject)

Phase	StartDate	EndDate	Content	Finish
1	Oct/22	Nov/17	Linear classifier	80%
2	Nov/18	Dec/1	KNN	100%
3	Dec/2	Dec/12	ANN	0%
4	Dec/13	Dec/17	finalized	0%

Brief report for the second updates:

- Build up a k-nearest neighbor classifier using the MATLAB package. The k value which stands for the number of neighbor features will be selected based on series of number from 1 to 10. An optimized k value was pickup based on minimum error rate computed. Here is the result figure for the error rate of different k value using the Euclidean distance.



- Explore the effect and sensitivity of different distance function including:
 1. Euclidean Distance: the most common distance function used in KNN classifier. The

reason to choose this function is that it is close to the l_2 loss function in linear classifier

2. Cityblock Distance: it is a distance usually used in analyzing the geographic info which consider the distance between two points as two tangible line at corner.
3. Minkowski Distance: select it because it is between cityblock and Euclidean distance
4. Correlation Distance: this distance is defined as one minus the correlation between y and X .

The report of different KNN with different function of distance with K varied from 1 to 10:

