Brian Niski

KNN Implementation Documentation

I added my new distance function:

A computer code with white text

AI-generated content may be incorrect.

This takes absolute distance between the points.

I changed the function call in “predict” to call my distance function:

A computer screen shot of a program code

AI-generated content may be incorrect.

“dist = self.manhattan\_distance(test\_point, train\_point)” used to be “dist = self.euclidean\_distance(test\_point, train\_point)”

I also made a few changes to the main function:

A computer screen shot of a program

AI-generated content may be incorrect.

It imports the csv library and opens the iris-dataset.csv in read mode and the csv\_reader is the output of the csv.reader(file) function. Then, I converted it to a list called “data” and deleted the first row because the top row of the file is the name of the columns. Then we iterate through a for loop of the length of the data and append the data into X\_train and Y\_train. The first four columns are for X\_train, the features, and the last column is for Y\_train, the class label. It prints X\_train and Y\_train. I changed the X\_test data to have the four features and set the ‘K’ value equal to the square root of the length of the X\_train list. It then prints the ‘K’ value. Finally, the algorithm is run and prints out the predictions.

The Euclidean distance measures the straight-line distance between two points in a Cartesian plane and the Manhattan distance calculates the distance between two points by only moving along grid lines.

Sample output:

|  |
| --- |
| [[5.1, 3.5, 1.4, 0.2], [4.9, 3.0, 1.4, 0.2], [4.7, 3.2, 1.3, 0.2], [4.6, 3.1, 1.5, 0.2], [5.0, 3.6, 1.4, 0.2], [5.4, 3.9, 1.7, 0.4], [4.6, 3.4, 1.4, 0.3], [5.0, 3.4, 1.5, 0.2], [4.4, 2.9, 1.4, 0.2], [4.9, 3.1, 1.5, 0.1], [5.4, 3.7, 1.5, 0.2], [4.8, 3.4, 1.6, 0.2], [4.8, 3.0, 1.4, 0.1], [4.3, 3.0, 1.1, 0.1], [5.8, 4.0, 1.2, 0.2], [5.7, 4.4, 1.5, 0.4], [5.4, 3.9, 1.3, 0.4], [5.1, 3.5, 1.4, 0.3], [5.7, 3.8, 1.7, 0.3], [5.1, 3.8, 1.5, 0.3], [5.4, 3.4, 1.7, 0.2], [5.1, 3.7, 1.5, 0.4], [4.6, 3.6, 1.0, 0.2], [5.1, 3.3, 1.7, 0.5], [4.8, 3.4, 1.9, 0.2], [5.0, 3.0, 1.6, 0.2], [5.0, 3.4, 1.6, 0.4], [5.2, 3.5, 1.5, 0.2], [5.2, 3.4, 1.4, 0.2], [4.7, 3.2, 1.6, 0.2], [4.8, 3.1, 1.6, 0.2], [5.4, 3.4, 1.5, 0.4], [5.2, 4.1, 1.5, 0.1], [5.5, 4.2, 1.4, 0.2], [4.9, 3.1, 1.5, 0.2], [5.0, 3.2, 1.2, 0.2], [5.5, 3.5, 1.3, 0.2], [4.9, 3.6, 1.4, 0.1], [4.4, 3.0, 1.3, 0.2], [5.1, 3.4, 1.5, 0.2], [5.0, 3.5, 1.3, 0.3], [4.5, 2.3, 1.3, 0.3], [4.4, 3.2, 1.3, 0.2], [5.0, 3.5, 1.6, 0.6], [5.1, 3.8, 1.9, 0.4], [4.8, 3.0, 1.4, 0.3], [5.1, 3.8, 1.6, 0.2], [4.6, 3.2, 1.4, 0.2], [5.3, 3.7, 1.5, 0.2], [5.0, 3.3, 1.4, 0.2], [7.0, 3.2, 4.7, 1.4], [6.4, 3.2, 4.5, 1.5], [6.9, 3.1, 4.9, 1.5], [5.5, 2.3, 4.0, 1.3], [6.5, 2.8, 4.6, 1.5], [5.7, 2.8, 4.5, 1.3], [6.3, 3.3, 4.7, 1.6], [4.9, 2.4, 3.3, 1.0], [6.6, 2.9, 4.6, 1.3], [5.2, 2.7, 3.9, 1.4], [5.0, 2.0, 3.5, 1.0], [5.9, 3.0, 4.2, 1.5], [6.0, 2.2, 4.0, 1.0], [6.1, 2.9, 4.7, 1.4], [5.6, 2.9, 3.6, 1.3], [6.7, 3.1, 4.4, 1.4], [5.6, 3.0, 4.5, 1.5], [5.8, 2.7, 4.1, 1.0], [6.2, 2.2, 4.5, 1.5], [5.6, 2.5, 3.9, 1.1], [5.9, 3.2, 4.8, 1.8], [6.1, 2.8, 4.0, 1.3], [6.3, 2.5, 4.9, 1.5], [6.1, 2.8, 4.7, 1.2], [6.4, 2.9, 4.3, 1.3], [6.6, 3.0, 4.4, 1.4], [6.8, 2.8, 4.8, 1.4], [6.7, 3.0, 5.0, 1.7], [6.0, 2.9, 4.5, 1.5], [5.7, 2.6, 3.5, 1.0], [5.5, 2.4, 3.8, 1.1], [5.5, 2.4, 3.7, 1.0], [5.8, 2.7, 3.9, 1.2], [6.0, 2.7, 5.1, 1.6], [5.4, 3.0, 4.5, 1.5], [6.0, 3.4, 4.5, 1.6], [6.7, 3.1, 4.7, 1.5], [6.3, 2.3, 4.4, 1.3], [5.6, 3.0, 4.1, 1.3], [5.5, 2.5, 4.0, 1.3], [5.5, 2.6, 4.4, 1.2], [6.1, 3.0, 4.6, 1.4], [5.8, 2.6, 4.0, 1.2], [5.0, 2.3, 3.3, 1.0], [5.6, 2.7, 4.2, 1.3], [5.7, 3.0, 4.2, 1.2], [5.7, 2.9, 4.2, 1.3], [6.2, 2.9, 4.3, 1.3], [5.1, 2.5, 3.0, 1.1], [5.7, 2.8, 4.1, 1.3], [6.3, 3.3, 6.0, 2.5], [5.8, 2.7, 5.1, 1.9], [7.1, 3.0, 5.9, 2.1], [6.3, 2.9, 5.6, 1.8], [6.5, 3.0, 5.8, 2.2], [7.6, 3.0, 6.6, 2.1], [4.9, 2.5, 4.5, 1.7], [7.3, 2.9, 6.3, 1.8], [6.7, 2.5, 5.8, 1.8], [7.2, 3.6, 6.1, 2.5], [6.5, 3.2, 5.1, 2.0], [6.4, 2.7, 5.3, 1.9], [6.8, 3.0, 5.5, 2.1], [5.7, 2.5, 5.0, 2.0], [5.8, 2.8, 5.1, 2.4], [6.4, 3.2, 5.3, 2.3], [6.5, 3.0, 5.5, 1.8], [7.7, 3.8, 6.7, 2.2], [7.7, 2.6, 6.9, 2.3], [6.0, 2.2, 5.0, 1.5], [6.9, 3.2, 5.7, 2.3], [5.6, 2.8, 4.9, 2.0], [7.7, 2.8, 6.7, 2.0], [6.3, 2.7, 4.9, 1.8], [6.7, 3.3, 5.7, 2.1], [7.2, 3.2, 6.0, 1.8], [6.2, 2.8, 4.8, 1.8], [6.1, 3.0, 4.9, 1.8], [6.4, 2.8, 5.6, 2.1], [7.2, 3.0, 5.8, 1.6], [7.4, 2.8, 6.1, 1.9], [7.9, 3.8, 6.4, 2.0], [6.4, 2.8, 5.6, 2.2], [6.3, 2.8, 5.1, 1.5], [6.1, 2.6, 5.6, 1.4], [7.7, 3.0, 6.1, 2.3], [6.3, 3.4, 5.6, 2.4], [6.4, 3.1, 5.5, 1.8], [6.0, 3.0, 4.8, 1.8], [6.9, 3.1, 5.4, 2.1], [6.7, 3.1, 5.6, 2.4], [6.9, 3.1, 5.1, 2.3], [5.8, 2.7, 5.1, 1.9], [6.8, 3.2, 5.9, 2.3], [6.7, 3.3, 5.7, 2.5], [6.7, 3.0, 5.2, 2.3], [6.3, 2.5, 5.0, 1.9], [6.5, 3.0, 5.2, 2.0], [6.2, 3.4, 5.4, 2.3], [5.9, 3.0, 5.1, 1.8]]  ['Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Setosa', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 'Versicolor', 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'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica', 'Virginica']  K: 12  Predictions: ['Setosa', 'Versicolor', 'Setosa']  The program 'python3.12.exe' has exited with code 4294967295 (0xffffffff). |