

## Recognition method: k-nearest-neighbor classifiers

It is based on learning by analogy, that is comparing a given test tuple with training tuples that are similar to it. When given an unknown tuple, a k-nearest-neighbor classifier searches the pattern space for the k training tuples that are closest to the unknown tuple. These k training tuples are the k nearest neighbors of the unknown tuple. From the k nearest neighbors the class which occurs most is the class of unknown tuple.

Error Rate (Training dataset: parts of characters4, Test dataset: parts of characters4, (1 stroke), decimated by 2)

For k = 1: error rate is 8.82%

For k = 3: error rate is 14.7%

For k = 5: error rate is 26.47%

For k = 7: error rate is 17.64%

For k = 9: error rate is 26.47%

Error Rate (Training dataset: parts of characters4, Test dataset: parts of characters4, (1 stroke), without decimation)

For k = 1: error rate is 8.28%

For k = 3: error rate is 17.64%

For k = 5: error rate is 23.52%

For k = 7: error rate is 38.23%

For k = 9: error rate is 26.47%

Error Rate (Training dataset: characters2, Test dataset: characters4, (1 stroke), decimated by 3)

For k = 1: error rate is 25.06%

For k = 3: error rate is 29.93%

For k = 5: error rate is 31.87%

For k = 7: error rate is 33.33%

For k = 9: error rate is 32.6%

Error Rate (Training dataset: characters2, Test dataset: characters4, (1 stroke), decimated by 2)

For k = 1: error rate is 26.76%

For k = 3: error rate is 31.87%

For k = 5: error rate is 35.28%

For k = 7: error rate is 36%

For k = 9: error rate is 38.69%

Error Rate (Training dataset: characters2, Test dataset: characters4, (1 stroke), without decimation)

For k = 1: error rate is 25.79%

For k = 3: error rate is 30.17%

For k = 5: error rate is 32.36%

For k = 7: error rate is 36%

For k = 9: error rate is 35.28%