

Kernelized Weighted K Nearest Neighbors

MATEUS MAIA MARQUES E ANDERSON ARA *

Abstract

The K Nearest Neighbors is one of the most simple and general statistical learning techniques. The implementation of the kernel trick proposes a modification in KNN method in which the observations are taken to higher dimensional spaces. Thus, through the inner product of the observations in the upper spaces, it is possible to compute a new similarity measure required for methods as weighted k nearest neighbors. In the approach to the problem we used the classic database of texts such as Inosphere, Wines and Seeds, using several types of kernel functions. All the results showed that the extension of KNN improved slightly the accuracy, but is necessary a more rigorous study about the use of each kernel functions and each hyperparameters.

References

- [1] Smola, Alex J., and Bernhard Scholkopf. Learning with kernels. Vol. 4. GMD-Forschungszentrum Informationstechnik, 1998.
- [2] Bijalwan, V., Kumar, V., Kumari, P., & Pascual, J. (2014). KNN based machine learning approach for text and document mining. International Journal of Database Theory and Application, 7(1), 61-70.

*e-mail: mateusmaia11@gmail.com