COMPARATIVE ANALYSIS OF THE DISTANCE FORMULA BETWEEN DATA IN THE LEARNING VECTOR QUANTIZATION METHOD

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ABSTRACT

Learning Vector Quantization (LVQ) is a single-layer net where the input layer is directly connected to each neuron at the output. Learning Vector Quantization (LVQ) quite depends on the distance calculation method which is used. This study used 6 distance calculation methods of Learning Vector Quantization, namely: Euclidean Distance, Manhattan Distance, Minkowsky Distance, Cosine Distance, Chebishev Distance, and Canberra Distance. The used of the 6 different distance calculation methods aimed to determine the ability of the 6 methods to calculate data distances. The test was carried out using 13,610 data, 10,000 data, 8,000 data and 5,000 data. With combinations of fold, learning rate, and MaxEpoch as well as different test tools. From the results of the tests that have been carried out, the highest results in terms of accuracy and calculation time were found in tests carried out using computer test equipment with an accuracy rate of 71.55% on the Canberra Distance formula and a combined learning rate of 0.001, MaxEpoch 150 with 7,000 data. As for the fastest calculation time, the calculation used 5,000 data with a calculation time of 3.8 minutes.

Keywords : *LVQ, Euclidean Distance, Manhattan Distance, Minkowsky Distance, Cosine Distance, Chebishev Distance, Canberra Distance*.