

ABSTRAK
PERBANDINGAN ALGORITMA *MODIFIED K-NEAREST NEIGHBOR*
DAN *K-NEAREST NEIGHBOR* UNTUK KLASIFIKASI KUALITAS AIR

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Air merupakan sebuah kebutuhan kedua yang sangat dibutuhkan manusia setelah udara. Air yang dimaksud adalah air sungai yang diolah menjadi air bersih untuk kebutuhan manusia. Kualitas Air menunjukkan persyaratan kesehatan yang memenuhi kondisi air. Berdasarkan keputusan Menteri Kesehatan Nomor 416 menyatakan bahwa air bersih harus memenuhi persyaratan yang meliputi keadaan fisik, kimia dan biologi. Oleh karena itu, sesuai dengan keputusan Pemerintah No. 82 Tahun 2001 perlu dilakukan pemantauan dan pengendalian air secara berkala. Pada penelitian ini, *Modified* Algoritma *K-Nearest Neighbor* dan *K-Nearest Neighbor* digunakan untuk klasifikasi kualitas air, dimana terdapat 210 data dan 7 fitur serta 1 kelas target. Tujuan dari penelitian ini untuk mengetahui tingkat akurasi model yang dibangun menggunakan algoritma *Modified K-Nearest Neighbor* dan *K-Nearest Neighbor* menggunakan normalisasi *min-max* dan *StandardScaler*. Hasil akurasi optimumnya mencapai 89,04% dengan *5-fold* pada *k* 3 pada Algoritma *K-Nearest Neighbor* dengan normalisasi *min-max*. Sedangkan ketika memakai algoritma *Modified K-Nearest Neighbor* dengan normalisasi *min-max* dan *5-fold* pada *k* 7, 9, dan 13 sebesar 88,09%. Pada percobaan memakai Algoritma *Modified K-Nearest Neighbor* dengan normalisasi yang berbeda yaitu *StandardScaler* dengan *5-fold* pada *k* 3 dan 13 hasil akurasi diperoleh sebesar 85,71%, sedangkan ketika memakai algoritma *K-Nearest Neighbor* menghasilkan akurasi 88,09% pada *k* 3 dengan *5-fold*.

Kata kunci : Kualitas Air, *Modified K-Nearest Neighbor*, Klasifikasi

ABSTRACT
COMPARISON OF MODIFIED K-NEAREST NEIGHBOR AND K-NEAREST NEIGHBOR ALGORITHM FOR WATER QUALITY CLASSIFICATION

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Water is a second need that is needed by humans after air. The water in question is river water which is processed into clean water for human needs. Water quality shows the health requirements that meet the water conditions. Based on the decision of the Minister of Health No. 416 stated that clean water must meet the requirements which include physical, chemical and biological conditions. Therefore, in accordance with Government Decree No. 82 of 2001 it is necessary to periodically monitor and control water. In this study, the Modified K-Nearest Neighbor and K-Nearest Neighbor Algorithms were used for water quality classification, where there were 210 data and 7 features and 1 target class. The purpose of this study is to determine the level of accuracy of the model built using the Modified K-Nearest Neighbor and K-Nearest Neighbor algorithms using min-max normalization and StandardScaler. The optimum accuracy results reach 89.04% with 5-fold on k 3 on the K-Nearest Neighbor Algorithm with min-max normalization. Whereas when using the Modified K-Nearest Neighbor algorithm with min-max and 5-fold normalization on k 7, 9, and 13 it is 88.09%. In the experiment using the Modified K-Nearest Neighbor Algorithm with a different normalization, namely the StandardScaler with 5-fold on k 3 and 13 the accuracy results were obtained at 85.71%, whereas when using the K-Nearest Neighbor algorithm it produced an accuracy of 88.09% on k 3 with 5-folds.

Keywords: Water Quality, Modified K-Nearest Neighbor, Classification