ABSTRACT

ILYAS WAHYU NUGROHO PRASETYO (30420581)

"APPLICATION OF MACHINE LEARNING TO PREDICTE THE FEASIBILITY OF CIBUBUR INDAH VILLA SWIMMING POOL WATER QUALITY"

Tugas Akhir, Industrial Engineering, Industrial Technology Faculty, Gunadarma University, 2024.

Key Words: Cibubur Indah Swimming Pool, Swim Pool Water, Prediction, Machine Learning.

(xv + 74 + Attachment)

The Cibubur Indah Swimming Pool is a public tourist attraction that provides facilities for swimming sports. The Cibubur Indah Swimming Pool operates every day from 08.00 am to 17.00 pm. The Cibubur Indah Swimming Pool is very busy with visitors both on weekdays and holidays. Based on this, swimming pool water quality has an important role in maintaining the health and comfort of swimmers.

The Cibubur Indah Swimming Pool has a problem, namely that based on data from January 2023 to June 2024, the Villa Cibubur Indah swimming pool shows that many pH levels and chlorine levels are less than standard or do not comply with the standards of Minister of Health Regulation No. 32 of 2017, namely with a pH level of 7 – 7.8 and a chlorine level of 1 – 1.5. Based on these problems, machine learning was applied using a supervised learning approach with the help of Orange Data Mining software to predict swimming pool water quality with the hope of being able to identify the dominant factors that influence the status of water quality and determine the model that has the highest performance in predicting water quality for the pool. Swimming can improve and maintain the water quality of the Cibubur Indah Swimming Pool.

The dominant factors that influence the status of water quality in the Villa Cibubur Indah swimming pool can be identified in order of rank from the highest value which has a big influence to the lowest value which has a small influence, namely CL (chlorine), morning water pH, evening water pH, temperature water, and year. There are six models used to analyze the data in this research, namely AdaBoost, Neural Network, Naïve Bayes, Logistic Regression, K-Nearest Neighbor (kNN), and Decision Tree. The model that has the best performance for predicting the suitability status of swimming pool water is the K-Nearest Neighbor (kNN) model.

BIBLIOGRAPHY (2010-2024)