

ABSTRACT

Optical communication systems have developed in the process of transmitting large amounts of information. High-capacity optical communication networks allow for a large amount of data corruption. Optical communication networks have various types of damage, namely macro and micro damage. The damage that occurs will affect the BER (Bit Error Rate) value which affects the quality of the optical communication network.

To overcome this problem, this study uses a predictive maintenance method to predict the initial steps of optical network signal quality using machine learning.. This study tests several machine learning algorithms, namely Naive Bayes, KNN (K-Nearest Neighbors), SVM (Support Vector Machine) , ANN (Artificial Neural Network), and Logistic Regression. The machine learning algorithm that gets the best prediction score will be implemented into the website.

The data for this test was taken using a simulator application, namely OptiSystem, by changing the channel, channel spacing, bitrate, and power. Based on the data obtained, the best machine learning algorithm results are in the ANN algorithm with a test ratio of 90:10 with an accuracy rate of 98.7%. The ANN algorithm is implemented into the website which will show predictions on fiber optic cables in the form of ideal, maintenance or repairing.

Keywords: Optical communication network, machine learning, prediction, ANN, website