

# Evaluation of Accelerograph Data Quality System Based on Machine Learning on Seismic Networks in Indonesia

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An analysis of the quality of accelerograph data has been carried out from 669 station locations. This aims to monitor and evaluate the data quality of accelerograph equipment at the Meteorology, Climatology, and Geophysics Agency (BMKG). Advances in machine learning can mean the ability to diagnose or even predict equipment problems so that site visits can be scheduled more cost-efficiently. The analysis was carried out by machine learning using accelerograph data in Indonesia. The study compares two machine learning models: accelerograph data analysis using Multilayer perceptron (MLP) and k-nearest neighbor (KNN). The output of machine learning models consists of two types of classification, namely four class output data quality in general, namely good condition, fair condition, bad, and off condition, at the output seven class output represents problems with the tool, such as high noise above the accelerometer noise model, sensor damage, etc. The analysis of the two models shows that MLP has a balanced accuracy of 85.5%, and KNN has a higher balanced accuracy of 91.2%. So in this study, a machine learning model was obtained to identify problems with the accelerograph equipment and evaluate network data quality for observing strong earthquakes due to seismic waves at BMKG.

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## Promotional text

This accelerograph data quality evaluation research uses a machine learning approach, which previous researchers have never done. The result is the ability to diagnose or even predict equipment problems more quickly and accurately.

## Oral preference format

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