Peramalan Tekanan Pipa Gas Menggunakan ANN dan Linear Regression

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Abstract
In the oil and gas industry, pipelines are essential for gas transport. Pipelines make it easier for companies to transport gas over long distances. However, sometimes pipeline failures occur and are generally unexpected. Therefore, a method is needed to carefully monitor gas transportation pipelines to minimize the occurrence of pipeline failures. One of the things that affects gas transportation is the pressure in the pipeline so that the gas in the pipeline reaches its destination. This research aims to apply machine learning methods to forecast gas pipeline pressure using Artificial Neural Network and Linear Regression methods that are measured with error value metrics to ensure the applied method can forecast pressure values correctly. The Linear Regression that forecasted six hours has error metrics of 0.39477psig, 0.62831psig, and 0.46523psig using MSE, RMSE, and MAE. While a four-layer ANN resulted in an error metric of 0.34596psig, 0.58819psig, and 0.43158psig using MSE, RMSE, and MAE. The result of the research concluded that a four-layer ANN model to forecast achieves fewer mistakes compared to the Linear Regression model.

Keywords: oil and gas, forecasting, Artificial Neural Network, Linear Regression, error metrics