

Abstract

The oil and gas industry is one of the most valuable energy sources and is often regarded as a key indicator of economic growth for a country. Globally, the demand for oil has increased significantly due to its wide usage in various sectors, such as transportation and household needs. One of the major risks in the oil and gas industry is accidents and equipment failure, which necessitates an accurate and precise anomaly detection system to minimize the risk of workplace accidents and improve safety, operational efficiency, and production. K-Nearest Neighbor (*KNN*) is one method that can be used for accurate and precise anomaly detection. This study aims to develop and apply the *KNN* method as a tool for anomaly detection in the oil and gas industry. The performance evaluation of the algorithm is conducted using the ROC Curve as a performance metric. In the oil and gas industry, various issues and anomalies can be encountered, which may significantly impact the final outcome and lead to detrimental effects, including workplace accidents and worker's safety. This study employs the *KNN* method, with the ROC Curve serving as the performance evaluation tool, showing a result of 0.74 or 74% after testing with different K-Nearest Neighbor values and parameters. The findings indicate that the method used can effectively detect anomalies

Keywords: Data Anomaly, K Nearest Neighbor, Oil and Gas Industry, ROC Curve.
