**ANOMALY DETECTION IN 3-PHASE MOTOR**

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**APPROACH FILE**

**Problem Statement**

Data set contains real-time current readings of a 3-phase AC motor (3.2hp) motor current signature analysis and model-based VI analysis to be done to detect anomalies.

Write an ML model to detect anomalies in this data set. The model should learn, and predict future anomalies

**Approach towards solving the problem:-**

Anomaly detection can be done in various ways but here Clustering is used, as we just have to predict the anomalies and segregate it out weather its outlier or not.

**The dataset has been changed manually and one outlier value has been updated than other values so that it acts as an anomaly and the algorithm can be detected.**

**Data-preprocessing / Feature Engineering used:-**

* Null Values have been checked for the data set and as it contained only 1 null value in the data set of 1, 00,000, I dropped the row.
* Feature Scaling has been done on the values. As the Values in row have wide range of variety, Standardization is done as it makes the training faster and makes it easy for a model to learn and understand the problem.

**Model Selection and Training:-**

* I have used **LocalOutlierFactor** unsupervised anomaly detection method to segregate the normal values and anomalies. It computes the local density deviation of a given data point with respect to its neighbors. It considers as outliers the samples that have a substantially lower density than their neighbors.
* The Values are predicted for future anomalies. And Visualization using BoxPlot has been done which clearly shows that the anomalies are present in the dataset.