Prediction of Engine's Problem Based on Oil Analysis Data by using Data Mining Tools Application

**Motivation & Objectives**
Doing lube oil analysis is very useful because it allows us to detect by example the component's wear, the corrosion or chemical degradation. The fact is, for each lube oil analysis, a lot of data is collected and saved but few are used just to check if there is a mechanical failure. Beside, doing lube oil analysis cost time and money. We would like to detect or predict anomalies without doing lube oil analysis. The goal of this work is to take into account all the data available of all sample in order to predict engine's problem by using a mathematical approach such as data mining tools application.

**Oil Function**
Engine oil takes a role of lifeblood of an engine. Indeed, it lubricates the engine to reduce the friction between parts. It has the capacity to cool various engine parts such as camshaft, bearings and pistons. Also it cleans the engine and prevents the corrosion of engine parts.

**Machine learning algorithm**
We have numerical data and we want to know if there is a problem in the engine or not, that means we have two output classes which means that we can use classification algorithm such as Decision Tree and Support Vector Machine algorithms.

**Results**
With around 80 % of accuracy, we can say that with 8 or 9 external factors such as oil running time or type of engine, we can predict an engine's problem. Besides other external parameters can be implemented such as oil type or piston rings. A good application could be a personalized maintenance plan.

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**LIEBHERR**
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