Machine Learning-Based Predictive Analytics for Aircraft Engine

Abstraction:

A failure in the aircraft engine tends to a huge loss of life and money. There is a need to analyse the condition of Aircraft engine and detect the failure period of it before it happens, which helps in reducing the accident of aircraft due to engine failure. Different aircraft engine uses different settings in each fly. So, there is a task to analyse the data from different sensors with different settings periodically. The idea of this project is to choose a ML model, train & validate it, deploy it with an API with user friendly UI.

Novelty:

In this project the idea is to increase the training speed of the model by recognizing the impactful factors which affect the target field. And to increase the accuracy of the model in the new set of data. Choosing different Time Series algorithm and compare all those to get the best accuracy and performance. The main freshness in the project is:

- Increasing Accuracy,
- Getting better prediction as using time series algorithm,
- Optimized API to get the predictions easily.

Feasibility of Project:

Every aircraft is different from each other in terms of sensor, engine and settings of it. One of the aims of the project is to build the model which is suitable for most of the aircraft engine. The data going to use in the project need to has data of settings, sensors of different aircrafts engine over the time, which may help in designing the model to work better in different aircraft.

Business Model:

The approach reduces man power which involved in testing the engine each time. It helps in identifying the engine failure or engine maximum cycles before each time of fly. It helps in saving more time and money. And importantly saves more life. It almost reduces 60% of over all process of formal procedures involved in inspecting the aircraft engine.

Social Impact:

Society wise the project ensure lot of people life who trust the aircraft. As it provides the cycles an aircraft engine can fly helps in schedule the aircraft service early and provide it without any delay. It helps the passengers to reach the destination on time without any delay.

Proposed architecture:

Extract the Data, Pre-process the data for the model, train the data with different algorithm, validate and select the best algorithm, create a API and connect it with the trained model, then connect it with a user friendly UI to get and show the input and result.