**Tools Used in Predictive Maintenance Systems**

**Internet Sensor (IoT)**

Accumulate the car’s information in real time from different parts of the car such as temperature, vibration and oil pressure.

**Edge Device**

Edge devices moves sensor’s information to the cloud, operating sensor data locally on the car before moving it to the cloud.

**Cloud Platform**

A massive amount of historical and current information are kept and handled by the cloud platform such as Azure and Google cloud.

**Machine Learning Framework**

Uses previous failed information to make and train the predictive models.

**Data Visualization Tools**

Give fleet manager’s with data and alert in a specific manner and in an understandable way.

**Fleet Management Software**

Maintenance planning and usual alerts in the operations.

**Technique used to solve the problem**

**Supervised Machine Learning**

To predict future faults, while models are instructed on labelled previous information, (e.g. This car part failed after 500 hours/ miles).

**Anomaly Detection**

Spots anomalous sequence in a sensor data that could alert car user about any failure earlier.

**Time Series Analysis**

Guess when a car part carries a risk of failure by checking the failure sequence over again.

**Feature Engineering**

Take out important part from a raw sensor information to boost prediction quality.