**Predictive Maintenance Project:**

**Problem Statement:**The goal of this project is to build a machine learning model to predict whether a machine is likely to experience a failure based on real-time sensor data. This is crucial for implementing predictive maintenance strategies, which help in reducing downtime, improving efficiency, and minimizing operational costs. Candidate will analyze the dataset, explore relationships between variables, and develop a classification model to predict the "Target" variable, which indicates whether a machine will fail or not.

**Objective**: Build a classification model using classification algorithms and compare their performances to predict whether a machine is likely to experience a failure or not.

**Dataset Overview:**

The dataset consists of 21 records and 9 columns. Each row represents a machine’s operational status under specific conditions. The task is to use the provided variables to predict the likelihood of a machine failure.

**Variable Descriptions:**

| Column Name | Description | Data Type |
| --- | --- | --- |
| UDI | Unique identifier for each machine record. | Integer (ID) |
| Product ID | Identifier for the machine’s product category. | String (Alphanumeric) |
| Type | Machine type - Low (L), Medium (M), High (H). | Categorical |
| Air temperature [K] | Temperature of the surrounding air (Kelvin). | Float (Continuous) |
| Process temperature [K] | Temperature during the manufacturing process (Kelvin). | Float (Continuous) |
| Rotational speed [rpm] | Speed of the machine’s rotation (Revolutions per minute). | Integer (Continuous) |
| Torque [Nm] | Torque produced by the machine (Newton-meters). | Float (Continuous) |
| Tool wear [min] | Amount of wear on the tool (Minutes of usage). | Integer (Continuous) |
| Target | Machine failure indicator (0: No Failure, 1: Failure). | Binary (0/1) |