Project Title: ML Models with IBM Watson

Problem Definition:

The problem at hand revolves around the need to empower individuals and orgamsations with the ability to make informed decisions by harnessing the power of predictive analytics. In today's data-driven world, understanding and leveraging data for actionable insights is crucial for success. However, many struggle with the complexity of implementing machine learning models, deploying them as services, and integrating them into their applications.

The specific challenges addressed in this project include:

- Complexity in Predictive Analytics: Many individuals and businesses lack the expertise to build and deploy predictive analytics models, limiting their ability to leverage data-driven decision-making.
- Integration Hurdles: Integrating machine learning models into applications can be challengmg, often requiring specialised knowledge and resources.
- Real-time Predictions: The need for real-time predictions is growing across various domains, from personalised recommendations in e-commerce to fraud detection in finance.
- Data-Driven Decision-Making: The project aims to bridge the gap between data and informed decisions by enabling users to apply predictive analytics effortlessly.

Design Thinking Approach:

Design thinking principles Will guide the development and deployment of our machine learning model. This approach ensures that our solution is usercentric, effective, and adaptable. Here are the key stages and subheadings Within the design thinking process:

1. Predictive Use Case

- Our predictive use case is to develop a machine learning model that predicts equipment maintenance needs in our manufacturing facility.

- Predictive maintenance will reduce downtime and improve operational efficiency.

2. Dataset Selection

- We will use historical maintenance records, sensor data, and equipment performance metrics as our dataset.
- This dataset will help us train a model to predict when equipment is likely to require maintenance.

3. Model Training

- Machine leaming algorithms such as recurrent neural networks (RNNs) and gradient boosting will be considered for this time-series prediction task.
- Feature engineering will be applied to extract relevant Information from sensor data and maintenance records.
- The model will be trained, and hyperparameters will be optimized to achieve accurate predictions.

4. Model Deployment

- We will deploy the model using IBM Cloud Watson Studio's deployment capabilities.
- An API endpoint will be set up to allow for real-time predictions based on incoming sensor data.
- Monitoring and alerting systems will be established to detect model perfomance degradation and drift.

5. Integration

- Real-time predictions will be Integrated into our equipment maintenance scheduling system.
- Maintenance teams will receive automated alerts when equipment is predicted to require attention.
- Integration with our Inventory management system will ensure the availability of spare parts.