Project Design
Phase-I
ProposedSolution

Date	19September2022
TeamID	PNT2022TMID08775
ProjectName	Efficient water quality analysis and prediction using Machine Learning
MaximumMarks	2Marks

ProposedSolution:

S.No.	Parameter	Description
1.	ProblemStatement(Problem to be solved)	• The quality of water is a major concern for people living in urban areas. The quality of water serves as a powerful environmental determinant and a foundation for the prevention and control of waterborne diseases. • Water makes up about 70% of the earth's surface and is one of the most important sources vital to sustaining life. Rapid urbanization and industrialization have led to a deterioration of water quality at an alarming rate, resulting in harrowing diseases. Water quality has been conventionally estimated through expensive and time-consuming lab and statistical analyses, which render the contemporary notion of real-timemonitoringmoot. • However predicting the urban waterquality is a challenging task since the water quality varies in urban spaces non-linearly and depends on multiplefactors, such as meteorology, waterusage patterns, and land uses, so thisproject aims at building a MachineLearning (ML) model to Predict WaterQuality by considering all water quality standard indicators.
2.	Idea/Solution description	• The proposed model predicts water quality by considering all water quality standard indicators using PH,DO,etc. • We need to train the dataset to run smoothly and see an incremental improvement in the

		prediction rate using Forest Regression algorithm on our dataset. • We will be building a web applicationthat is integrated to the modelbuilt. AUI is provided for the uses where hehas to enter the values for predictions.The enter values are given to the saved model and prediction is showcased on the UI.
3.	Novelty/Uniqueness	• With machine learning techniques, the implementation was done by the Water Quality Index (WQI) which is a singlenumeric index that mirrors the overall quality of water with high accuracy. • The heart of the project depends upon the prediction of the quality of the water. As abundant as algorithms are present in order to achieve such a goal,it is mandatory to select the bestand the most efficient algorithm to finalize the predicted value. • Web app is developed as UI is providedfor the user where he has to enter thevalues for predictions.
4.	SocialImpact/Customer Satisfaction	• Water makes up about70%ofthe earth's surface and is one of the most important sources vital to sustaining life. Rapid urbanization and industrialization have led to a deterioration of water quality at an alarming rate, resulting in harrowing diseases. • Most of the research either employed manual lab analysis,not estimating the water quality index standard, or used too many parameters to be efficient enough. • With machine learning techniques, the implementation was done by the Water Quality Index(WQI). • Web app is developed as UI is providedfor the customer/user where he has to enter the values for predictions.
5.	BusinessModel(RevenueModel)	• A web application that is integrated tothe modelbuilt. A UI is provided for the uses where he has to enter the values for predictions. The enter values are given to the saved model

		and prediction is showcased on the UI and deploy it on IBM cloud. • We can sell it for the prediction ofwater in various environments if the model preforms well ,also can make the app as premium one.
6.	Scalability of the Solution	• The proposed can be implemented inrealtime water quality analysis bygetting water sample using devices. • Real time apllications can be used in various places like schools, colleges etc. • Machine learing model integrated with DS can make users more comfortable and to use in real time.