WATER QUALITY ANALYSIS

Water quality analysis using ML Algorithm

Analyzing water quality using Machine Learning (ML) algorithms involves leveraging computational techniques to process and interpret water quality data, predict parameters, and detect anomalies. Here's a step-by-step approach to implementing water quality analysis using ML algorithms:

Machine Learning Algorithms that we are Going to use

1. Logistic Regression

2. Decision Tree

3. Random Forest

4. K-Nearest Neighbours

5. Support Vector Machine

whole Data set Required

Data Preprocessing:

Handle missing values, outliers, and any inconsistencies in the dataset.
Perform feature scaling, normalization, or transformation as needed.

Feature Selection:

Identify relevant features that contribute to the water quality analysis using techniques like correlation analysis, feature importance, or domain knowledge.

Model Training:

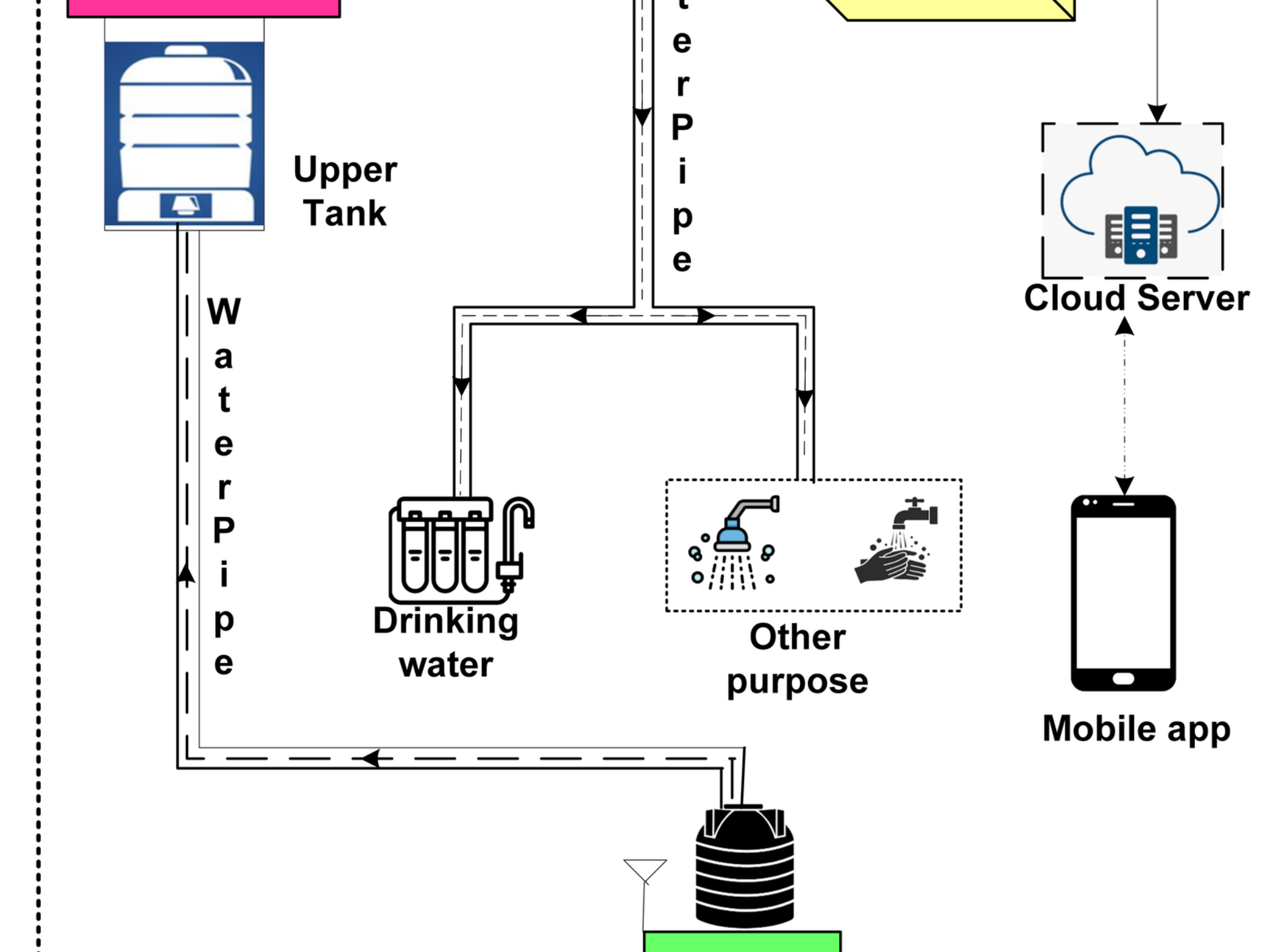
Split the dataset into training and testing sets.
Train the selected ML models using the training set and validate them using the testing set.

Hyperparameter Tuning

- Optimize model performance by tuning hyperparameters using techniques like grid search or random search.

1. Basic statistics of the parameters used to classify water quali

meters (Units)									
O5 /L)		COD (mg/L)		TSS (mg/L)		FC (NMP/100 mL)		E_COLI (NMP/100 mL)	
n	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
	33	63	75	58	90	7294	6591	2026	1819
	35	62	73	61	94	7233	6597	1899	1814
	34	63	75	60	91	7306	6575	2027	1814
	32	63	74	56	89	7244	6631	1980	1832
	33	62	73	58	90	7282	6611	2018	1827
	34	65	78	60	92	7301	6547	2001	1800


Upper Tank
Water Pipe
Water Pipe
Drinking water
Other purpose
Cloud Server
Mobile app

Continuous Monitoring and Improvement

Monitor the model's performance and gather new data to continually improve the model's accuracy and relevance.