



PROJECT TITLE

ML BASED WATER QUALITY PREDICTION FOR AQUACULTURE

GUIDED BY

DR. RAJKUMAR.R

PRESENTED BY

G.SRINIVASULU(27016)

M.PRAVEENREDDY(27150)

Y.GANESH(27151)

ABSTRACT

- This project proposes a machine learning approach for early detection of fish diseases by analyzing water quality. Utilizing a Gradient Boosting algorithm trained on water quality data, the aim is to predict fish health by assessing toxins and viruses in water samples. This proactive method allows for real-time monitoring and management of fish health, helping to prevent disease outbreaks and maintain healthy fish populations in aquaculture. Aquaculture plays a significant role in global food production, but fish diseases pose a major threat to the industry, leading to substantial economic losses and jeopardizing food security. This project proposes a machine learning-based approach for the early detection of fish diseases by analyzing water quality parameters.

OBJECTIVE

- To predict the condition of the aquatic animals using water quality parameters by applying machine learning algorithms.
- To test the water quality parameters; prepare the data set ; predict the values using ML algorithm.

INTRODUCTION

- Maintenance of a **healthy aquatic environment and production** in ponds are **two factors** of primary importance for successful aquaculture culture operation.

- The **nutrient status of water** play the most important role in governing the production.
- The bottom soil governs the storage and release of nutrients to the overlying water through various chemical and biochemical processes for biological production in the environment.
- Also, the **physical condition and chemical composition** of water quality are parameters to be taken care.
- **Water quality directly influence** the survival and growth of fish, and hence, necessitate careful management.

WATER QUALITY PARAMETERS



Dissolved Oxygen (DO) – Critical for fish respiration and aquatic health.

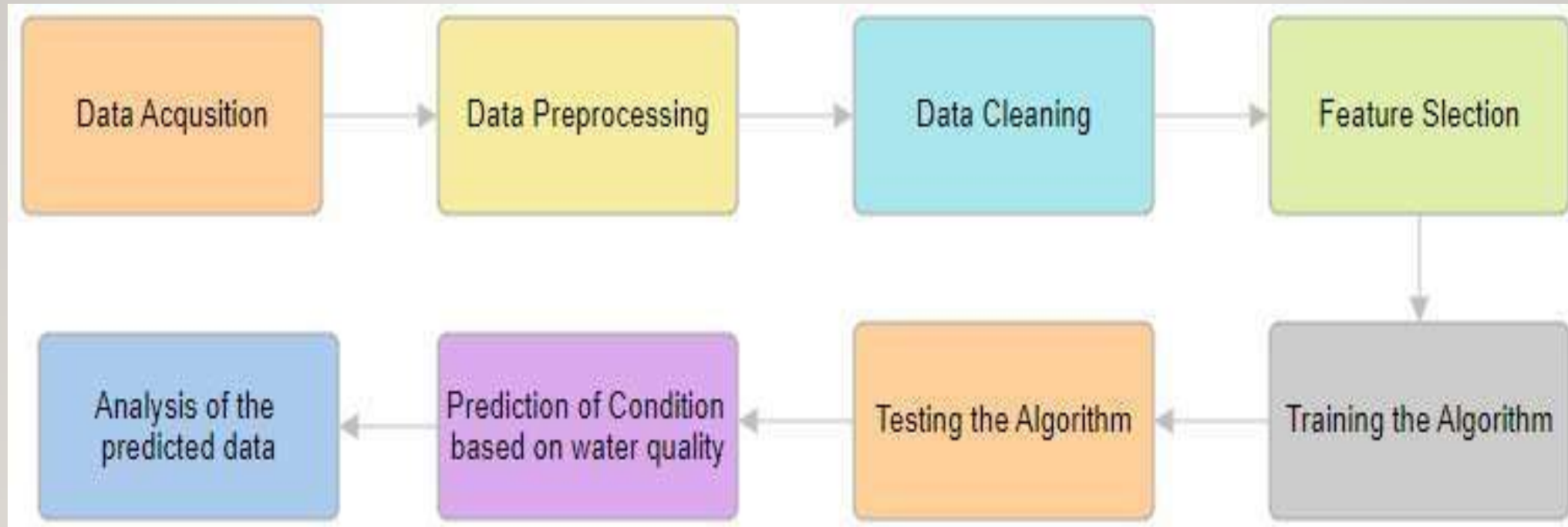
pH – Influences biological processes and the solubility of nutrients and gases.

Temperature – Affects metabolism, growth rates, and oxygen solubility.

Ammonia (NH₃) – Toxic to aquatic organisms at elevated levels.

Nitrite (NO₂) – Highly toxic to fish, especially in low-oxygen environments.

BLOCK DIAGRAM



SOFTWARE USED

- Python

TIMELINE PLAN

Month	week	Task
Fed	1	Literature Survey
Feb	2	Framing the objective
Feb	3	Implementaion
Mar	1	Implementaion
Mar	2	Performance Evaluation
Mar	3	Comparison of Results
Mar	4	Documentation for Confence and repart Draft
Apr	1	Documentation for Confence and repart Draft
Apr	2	Final Report
Apr	3	Final Report
Apr	4	Final Report

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THANK YOU

