

**[Final Year Project Proposal]**

Sr#	Student Name	Roll Number	Credit Completed	Signature
1	Sajid Ali	21P-8023	100	
2	Muhammad Nauman	21P-8045	97	
3	Ammar Raza	21P-8004	100	

**Suggested Supervisor:**Faculty Member's Name: Usman Wajid

Signature: \_\_\_\_\_

Date (13 September 2024)

**Project Details**

<b>Project Title</b>	Water Quality-Driven Fish Type Selection and Growth Monitoring for Sustainable Aquaculture		
<b>Project Area of Specialization</b>	<ol style="list-style-type: none"><li>1. Sustainable Aquaculture</li><li>2. Water Quality Monitoring</li><li>3. IoT</li><li>4. Machine Learning</li></ol>		
<b>List Related Core Subjects</b>	<ol style="list-style-type: none"><li>1. Object Oriented Programming</li><li>2. Data Structures</li><li>3. Database Systems</li></ol>		
<b>List Related Elective Subjects</b>	<ol style="list-style-type: none"><li>1. Internet of Things (IoT)</li><li>2. Artificial Intelligence</li><li>3. Machine Learning</li></ol>		
<b>Project Start Date</b>	2024-09-12	<b>Project End Date</b>	2025-06-31
<b>Project Summary (less than 2500 characters)</b>	The project aims to develop an intelligent, water-quality-driven system for selecting fish types and monitoring their growth in aquaculture environments. By integrating sensors to measure water parameters such as pH, temperature, ammonia, and nitrogen levels, the system will recommend optimal fish species that can thrive in those conditions. Furthermore, it will monitor the growth of the fish in real-time, using machine learning to predict growth rates based on water quality, feed, and environmental conditions, contributing to more sustainable fish		

	farming practices.
<b>Project Objectives (less than 2500 characters)</b>	<ol style="list-style-type: none"> <li>1. Develop a system to monitor critical water quality parameters like pH, temperature, and chemical levels using IoT-based sensors.</li> <li>2. Implement a fish species recommendation engine based on water conditions to enhance sustainability and yield.</li> <li>3. Design and implement a machine learning model to monitor and predict fish growth based on water quality, feed, and other factors.</li> <li>4. Build a user-friendly dashboard for aquaculture farmers to manage and track real-time data.</li> </ol>
<b>Project Implementation Method (less than 2500 characters)</b>	The project will be implemented using IoT sensors to collect data from the water in real-time. The data will be transmitted to a central server where it will be processed using machine learning algorithms. These algorithms will predict the suitability of different fish species based on water quality and monitor fish growth over time. A user-friendly dashboard will be developed to display this information, allowing fish farmers to make informed decisions about which species to raise and how to optimize their aquaculture practices for sustainability.
<b>Benefits of the Project (less than 2500 characters)</b>	<ol style="list-style-type: none"> <li>1. Improve the sustainability of aquaculture practices by ensuring that the right fish species are selected for the prevailing water conditions.</li> <li>2. Provide real-time monitoring and predictive insights to reduce fish mortality and improve overall yield.</li> <li>3. Help aquaculture farmers optimize feed usage and water quality, reducing costs and improving environmental impact.</li> </ol>
<b>Technical Details of Final Deliverable (less than 2500 characters)</b>	We are going to develop an IoT-based system that integrates water quality monitoring sensors, a machine learning model for fish type selection and growth prediction, and a web-based dashboard for real-time data visualization and management.

<b>Final Deliverable of the Project</b>	<ul style="list-style-type: none"> <li>IoT-based water quality monitoring system</li> <li>Machine learning model for fish type selection and growth prediction</li> <li>Web-based dashboard for real-time monitoring and reporting</li> </ul>
<b>Type of Industry</b>	Aquaculture, Sustainable Fisheries, Environmental Technology
<b>Technologies</b>	<ul style="list-style-type: none"> <li>Internet of Things (IoT)</li> <li>Machine Learning</li> <li>Web Development (Dashboard)</li> <li>Data Analytics</li> </ul>
<b>Sustainable Development Goals</b>	<ol style="list-style-type: none"> <li><b>SDG 12: Responsible Consumption and Production</b> - This goal promotes sustainable practices in industries, reduces food waste, and encourages resource efficiency to minimize environmental impact.</li> <li><b>SDG 14: Life Below Water</b> - This goal focuses on conserving and sustainably using oceans, seas, and marine resources, ensuring that aquaculture practices protect aquatic ecosystems and biodiversity.</li> </ol>

### Project Equipment Details

Item Name	Type	No. of Units	Per Unit Cost (in Rs)	Total (in Rs)
Arduino UNO	Equipment	2	3500	7000
PH sensor	Equipment	2	1500	3000
Temperature sensor	Equipment	2	1200	2400
Ammonia Sensor	Equipment	2	8000	16000
GSM module	Equipment	5	1300	2600
Others	Miscellaneous	1	10000	10000
			<b>Total in (Rs)</b>	<b>41000</b>