

## ***Water Quality Determination System for Koi Fish***

### ***Using IoT and Decision Tree Method***

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## **ABSTRACT**

*Koi are ornamental fish with high economic value and strong popularity in Indonesia. The success of koi fish farming is highly dependent on the quality of the pond water in which they live. This water quality can be determined by several parameters, such as acid level, turbidity, and temperature. However, manual inspection and cleaning of pond water are considered inefficient and prone to human error. This study aims to develop an Internet of Things (IoT)-based water quality control system for koi fish ponds by implementing a Decision Tree algorithm. The system integrates several sensors, namely, a pH sensor, a TDS sensor, and a DS18B20 temperature sensor that are connected to an ESP32 microcontroller. The collected data are classified into three categories: optimal, good, and poor, and the results are displayed through a website interface. Testing results indicate that the system achieved a classification accuracy of up to 100%, with sensor error rates of 0% for TDS, 2.30% for pH, and 1.77% for temperature. Additionally, the website's software functionality, evaluated using the BlackBox method, demonstrated 100% validity. Therefore, this system has proven to be effective and accurate in automatically monitoring and classifying koi pond water quality.*

*Keywords: Decision Tree, Internet of Things, Koi, Water Quality*