WATER QUALITY MONITORING SYSTEM FOR AQUACULTURE USING IOT AND MACHINE LEARNING

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The aquaculture industry's success hinges on maintaining optimal water quality, especially for fish breeding. This study aims to optimize aquaculture practices through an IoT-enabled water quality monitoring system. By integrating advanced sensors like temperature, pH, and TDS, the system allows real-time monitoring of critical parameters This proposed framework applied Arduino innovation and NodeMcuESP8266 as the microprocessors. The gathered data is accessible through a user-friendly interface, providing valuable insights in to water quality trends. Furthermore, the obtained data is sent to the IoT based Blynk application to monitor the quality of the water through android mobile phone. When the water quality parameters in out of range, system will trigger a SMS alert using GSM module (SIM800L). Additionally, collected data is analysed using random forest regression models to predict water quality fluctuations and optimize breeding environments. This research aims to propel aquaculture enterprises towards unprecedented levels of efficiency, sustainability, and breeding success in harmony with aquatic ecosystems.

Keywords: Aquaculture, Arduino, Fish breeding, IoT, NodeMcuESP8266.