Biofloc farming with IoT and machine learning predictive water quality system

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ABSTRACT

Biofloc fish farming system depends on full-time monitoring of water quality. The Internet of Things (IoT) can play a vital role in promoting development. However, only a few are able to do stream or real-time predictive analytics at a high cost. Therefore, This article introduces a Biofloc monitoring system based on IoT., which is proficient in performing stream analytics and predictive at a lower cost. This paper evaluates the predictive analytics of the Autoregressive Integrated Moving Average (ARIMA) based on Percentage Error (PE) and Prediction Accuracy (PA). Findings show that ARIMA's PE is 1.96%, 7.83 %, 1.78%, 12.17%, 4.52% and 0.58%, for DO, EC, pH TDS, Temperature and water volume, respectively which led to achieving higher prediction accuracy (PA) percentage of 98.03%, 92.16%, 98.21%, 87.82%, 95.47% and 99.41% correspondingly.

KEYWORDS

Aquaculture monitoring system; ARIMA Forecasting Model; Biofloc technology; Internet of Things

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