

Machine learning application in growth and health prediction of broiler chickens

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Abstract

Artificial intelligence (AI) already represents a factor for increasing efficiency and productivity in many sectors, and there is a need for expanding its implementation in animal science. There is a growing demand for the development and use of smart devices at the farm level, which would generate enough data, which increases the potential for AI using machine learning algorithms and real-time analysis. Machine learning (ML) is a category of algorithm that allows software to become accurate in predicting outcomes without being explicitly programmed. The essential principle of machine learning is to construct algorithms that can receive input data and use statistical analysis to predict an output. Exploitation of machine learning approaches, by using different training inputs, derived the prediction accuracy of growth and body weight in broiler chickens that ranged from 98 to 99%. Furthermore, a neural network with an accuracy of 100% identified the presence or absence of ascites in broiler chickens, while the support vector machine (SVM) model obtained an accuracy rate of 99.5% in combination with machine vision for the recognition of healthy and bird flu-challenged chickens. Consequently, machine learning algorithms, besides accurate growth prediction of broiler chickens, can successfully contribute to health disorders prediction. It is obvious that machine learning has a great potential for application in the future. This paper analyses machine learning applications in broiler growth and health prediction, and its ability to cope with high inputs of data and non-linearity can successfully replace common methodology.

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