

An approach towards iot-based predictive service for early detection of diseases in poultry chickens

ABSTRACT

The poultry industry contributes majorly to the food industry. The demand for poultry chickens raises across the world quality concerns of the poultry chickens. The quality measures in the poultry industry contribute towards the production and supply of their eggs and their meat. With the increasing demand for poultry meat, the precautionary measures towards the well-being of the chickens raises the concerns of the industry stakeholders. The modern technological advancements help the poultry industry in monitoring and tracking the health of poultry chicken. These advancements include the identification of the chickens' sickness and well-being using video surveillance, voice observations, and feces examinations by using IoT-based wearable sensing devices such as accelerometers and gyro devices. These motion-sensing devices are placed over a chicken and transmit the chicken's movement data to the cloud for further analysis. Analyzing such data and providing more accurate predictions about chicken health is a challenging issue. In this paper, an IoT based predictive service framework for the early detection of diseases in poultry chicken is proposed. The proposed study contributes by extending the dataset through generating the synthetic data using Generative Adversarial Networks (GAN). The experimental results classify the sick and healthy chicken in a poultry farms using machine learning classification modeling on the synthetic data and the real dataset. Theoretical analysis and experimental results show that the proposed system has achieved an accuracy of 97%. Moreover, the accuracy of the different classification models are compared in the proposed study to provide more accurate and best performing classification technique. The proposed study is mainly focused on proposing an Industrial IoT-based predictive service framework that can classify poultry chickens more accurately in real time.