

Autonomous Hydroponic Environment with LiveRemote Consulting System for Strawberry Farming

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Abstract

Strawberries are a very popular fruit and are widely consumed all over the world. Due to its nutritional value, its consumption has increased tremendously in recent times. Strawberry, which has such high health and economic value, is grown in only one area in Sri Lanka. This is due to the fact of the climate in those areas being favorable for strawberries. Using the Internet of Things, image processing and machine learning, this research proposed a design for a closed environment with automatic monitoring and controlling of environmental factors and nutrition required for strawberry cultivation with the capability of remote live monitoring and analysis of each plant. Also, the proposed system captures the images of each strawberry plant using a camera navigation system and analyses those images using a machine learning algorithm to identify the growing stage. This decision making process was verified using strawberry pictures acquired from a strawberry farm. In addition, current capturing images can use in the next growth cycle to increase accuracy. The proposed system can be easily expanded by increasing the height of the tower and refrigeration power. Through this, strawberry cultivation can be expanded to all parts of Sri Lanka by overcoming climatic and geographical limitations.

Keywords

Strawberry Farming, IoT, Population, Vertical Farming